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# **PRACTICE PSAT 2**



**ANSWER SHEET**

Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_

Date: \_\_\_\_\_ Testing Location: \_\_\_\_\_

**Administering the Test**

- **Remove this answer sheet** from the book and use it to record your answers to this test.
- This test will require **2 hours and 10 minutes** to complete. Take this test in one sitting.
- Use a stopwatch to time yourself on each section. The time limit for each section is written clearly at the beginning of each section. The first four sections are 25 minutes long, and the last section is 30 minutes long.
- Each response must **completely fill the oval**. **Erase all stray marks completely**, or they may be interpreted as responses.
- **You must stop ALL work on a section when time is called.**
- If you finish a section before the time has elapsed, check your work on that section. **You may NOT move on to the next section until time is called.**
- Do not waste time on questions that seem too difficult for you.
- Use the test book for scratchwork, but you will only receive credit for answers that are marked on the answer sheets.

**Scoring the Test**

- Your scaled score, which will be determined from a conversion table, is based on your raw score for each section.
- You will receive one point toward your raw score for every correct answer.
- You will receive no points toward your raw score for an omitted question.
- For each wrong answer on a multiple-choice question, your raw score will be reduced by 1/4 point. For each wrong answer on a numerical “grid-in” question (Section 4, questions 29–38), your raw score will receive no deduction.

SECTION  
**1**  
Critical Reading  
25 minutes

- |                        |                         |                         |
|------------------------|-------------------------|-------------------------|
| 1. (A) (B) (C) (D) (E) | 9. (A) (B) (C) (D) (E)  | 17. (A) (B) (C) (D) (E) |
| 2. (A) (B) (C) (D) (E) | 10. (A) (B) (C) (D) (E) | 18. (A) (B) (C) (D) (E) |
| 3. (A) (B) (C) (D) (E) | 11. (A) (B) (C) (D) (E) | 19. (A) (B) (C) (D) (E) |
| 4. (A) (B) (C) (D) (E) | 12. (A) (B) (C) (D) (E) | 20. (A) (B) (C) (D) (E) |
| 5. (A) (B) (C) (D) (E) | 13. (A) (B) (C) (D) (E) | 21. (A) (B) (C) (D) (E) |
| 6. (A) (B) (C) (D) (E) | 14. (A) (B) (C) (D) (E) | 22. (A) (B) (C) (D) (E) |
| 7. (A) (B) (C) (D) (E) | 15. (A) (B) (C) (D) (E) | 23. (A) (B) (C) (D) (E) |
| 8. (A) (B) (C) (D) (E) | 16. (A) (B) (C) (D) (E) | 24. (A) (B) (C) (D) (E) |

Time: 25 minutes

Start: \_\_\_\_\_

Stop: \_\_\_\_\_

SECTION  
**2**  
Math  
25 minutes

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| 1. (A) (B) (C) (D) (E) | 9. (A) (B) (C) (D) (E)  | 17. (A) (B) (C) (D) (E) |
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Time: 25 minutes

Start: \_\_\_\_\_

Stop: \_\_\_\_\_

**SECTION 3**  
**Critical Reading**  
 25 minutes

25. (A) (B) (C) (D) (E)    33. (A) (B) (C) (D) (E)    41. (A) (B) (C) (D) (E)  
 26. (A) (B) (C) (D) (E)    34. (A) (B) (C) (D) (E)    42. (A) (B) (C) (D) (E)  
 27. (A) (B) (C) (D) (E)    35. (A) (B) (C) (D) (E)    43. (A) (B) (C) (D) (E)  
 28. (A) (B) (C) (D) (E)    36. (A) (B) (C) (D) (E)    44. (A) (B) (C) (D) (E)  
 29. (A) (B) (C) (D) (E)    37. (A) (B) (C) (D) (E)    45. (A) (B) (C) (D) (E)  
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 31. (A) (B) (C) (D) (E)    39. (A) (B) (C) (D) (E)    47. (A) (B) (C) (D) (E)  
 32. (A) (B) (C) (D) (E)    40. (A) (B) (C) (D) (E)    48. (A) (B) (C) (D) (E)

Time: 25 minutes  
 Start: \_\_\_\_\_  
 Stop: \_\_\_\_\_

**SECTION 4**  
**Math**  
 25 minutes

21. (A) (B) (C) (D) (E)    25. (A) (B) (C) (D) (E)  
 22. (A) (B) (C) (D) (E)    26. (A) (B) (C) (D) (E)  
 23. (A) (B) (C) (D) (E)    27. (A) (B) (C) (D) (E)  
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Time: 25 minutes  
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**SECTION 5**  
**Writing Skills**  
 30 minutes

1. (A) (B) (C) (D) (E)    14. (A) (B) (C) (D) (E)    27. (A) (B) (C) (D) (E)  
 2. (A) (B) (C) (D) (E)    15. (A) (B) (C) (D) (E)    28. (A) (B) (C) (D) (E)  
 3. (A) (B) (C) (D) (E)    16. (A) (B) (C) (D) (E)    29. (A) (B) (C) (D) (E)  
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 11. (A) (B) (C) (D) (E)    24. (A) (B) (C) (D) (E)    37. (A) (B) (C) (D) (E)  
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 13. (A) (B) (C) (D) (E)    26. (A) (B) (C) (D) (E)    39. (A) (B) (C) (D) (E)

Time: 30 minutes  
 Start: \_\_\_\_\_  
 Stop: \_\_\_\_\_

# Section 1

Time—25 minutes

24 Questions (1–24)

Each of the sentences below is missing one or two portions. Read each sentence. Then select the choice that most logically completes the sentence, taking into account the meaning of the sentence as a whole.

Example:

Rather than accepting the theory unquestioningly, Deborah regarded it with -----.

- (A) mirth
- (B) sadness
- (C) responsibility
- (D) ignorance
- (E) skepticism

*Correct response: (E)*

**1** The lawyer was ----- in her cross-examination; her aggressive questioning continued for what seemed like days.

- (A) unrelenting
- (B) sympathetic
- (C) casual
- (D) reflective
- (E) stagnant

**2** A disaster was ----- by the quick-thinking helmsman, who steered the ship away from the rocks that had ----- emerged from the ocean.

- (A) predicted . . permanently
- (B) forestalled . . reluctantly
- (C) averted . . suddenly
- (D) dispelled . . passively
- (E) avoided . . serenely

**3** The ----- decline in the price of the stock caught many investors unprepared; they had expected its value to remain ----- for many months, if not years.

- (A) unexpected . . volatile
- (B) gradual . . low
- (C) improvised . . uniform
- (D) cumbersome . . liquid
- (E) precipitous . . stable

**4** Unlike our previous manager, who often made sudden decisions without thinking carefully about them, the new one is far more ----- and deliberate.

- (A) capricious
- (B) pensive
- (C) remorseful
- (D) intolerant
- (E) inexorable

**5** When spending long periods of time among the tribal peoples whose cultures they are studying, ----- should be careful not to introduce harmful germs or disruptive technologies into those societies.

- (A) herpetologists
- (B) oncologists
- (C) ornithologists
- (D) agronomists
- (E) anthropologists

**6** Alicia's ----- performance in the company play astonished those who were familiar with her ----- demeanor at work.

- (A) fearless .. intrepid
- (B) emotional .. stolid
- (C) inspiring .. meticulous
- (D) stable .. attentive
- (E) amusing .. flippant

**7** In an industry in which truthfulness is too often an impediment to success, many salespeople have had to become masters of ----- in order to advance their careers.

- (A) prevarication
- (B) timidity
- (C) certitude
- (D) perseverance
- (E) consumption

**8** Gina considered her thousands of hours of volunteer work to be selfish rather than -----; she simply enjoyed working with people and did not consider herself a paragon of -----.

- (A) altruistic .. magnanimity
- (B) egotistical .. placidity
- (C) generous .. diversity
- (D) reassuring .. distortion
- (E) desperate .. obsession

The passages below are followed by questions based on their content and the relationship between the passages. Answer each question based on what is stated or implied in the passages.

### Questions 9–12 are based on the following passages.

#### Passage 1

Line Reasoning is a vital human activity. For  
unlike some animals able to function  
instinctively, we need knowledge in order to  
survive. At the very least, knowledge facilitates  
5 the pursuit of happiness. Some knowledge can  
be gained directly. In this way we know, for  
example, that an object in front of us looks

orange and tastes sweet. But we cannot know  
that it is edible and nutritious, or that it  
contains vitamin C, which prevents scurvy,  
10 without a process of reasoning. Similarly, we  
do not need reasons to believe that every  
triangle has three angles. But we cannot know  
that the angles of a triangle add up to 180°  
without evidence or proof. The vast bulk of  
15 human knowledge is based on reasoning.  
Indeed, our knowledge can be described as a  
pyramid, in which what is directly evident  
provides the foundation on which all other  
beliefs are based.

#### Passage 2

20 All people ever want from us in an argument  
is agreement, and they do not care how they get  
it. Believing this leads to a very suspicious,  
critical, investigative attitude which is the first  
requirement of successful argumentation.  
25 Believe nothing. The less we believe, the less  
likely we are to believe something false. When  
arguing we always assume our opposers are  
both sharp-minded and low-minded, so we  
never underrate their ability. Since many  
30 argument maneuvers are not made *consciously*,  
the simple fact that people are sincere does not  
mean we can trust their arguments (though we  
might be able to trust them). They might think  
their arguments are correct when they may be  
35 full of errors. And, some people who believe in a  
position also believe that anything furthering  
the position is acceptable. This is the attitude  
that “the end justifies the means.” But while they  
are already convinced, we are not. We want the  
40 straight goods, while they want to sell us a bill  
of goods.

**9** Passage 1 suggests that knowledge can be “gained directly” (line 5–6) through

- (A) instruction
- (B) instinctive reactions
- (C) reading
- (D) reasoning
- (E) the physical senses

First paragraph: *An Introduction to Logic*, ©1985 by Prentice-Hall, Inc. Reproduced courtesy of Pearson Education, Inc., Upper Saddle River, NJ.

Second paragraph: *How to Win an Argument*, Michael A. Gilbert. © 1965 McGraw Hill, New York, p. 12

**10** The author of Passage 2 suggests that we should have which of the following attitudes toward argumentation?

- (A) delight
- (B) skepticism
- (C) avoidance
- (D) humor
- (E) trust

**11** The sentence beginning on line 29 ["Since many argument . . . to trust them"] assumes that many of those who make arguments

- (A) are not fully aware of their reasoning
- (B) are not sincere about their positions
- (C) are too trusting of others
- (D) rely on manipulative strategies of argumentation
- (E) do not have any formal training in logical analysis

**12** The two passages differ in their perspectives on belief in that Passage 1 regards it as

- (A) a necessary prerequisite of scientific reasoning, while Passage 2 regards it to be exclusively in the domain of religious thought
- (B) something that can be gained directly, while Passage 2 regards it as something unattainable
- (C) the ultimate goal of reasoning, while Passage 2 claims it can be antithetical to good argumentation
- (D) the result of an instinctual process, while Passage 2 regards it as the result of a conscious process
- (E) something that people are trying to avoid, while Passage 2 regards it as something that everyone seeks

The questions below are to be answered on the basis of what is stated or implied in the passages below or the introductory material that precedes the passages.

**Questions 13–24 are based on the following passages.**

*The following passages discuss the moral and social value of capital punishment.*

**Passage I**

Line Reverence for human life is part of the moral foundation of a just society. The only justification for causing death is to prevent the deaths of others. Thus, individuals have the right to use deadly force to save their own lives from criminal aggressors, and countries have the right to wage war to prevent their own destruction. Likewise, a community can and should use capital punishment to protect the lives of its members. Saint Thomas Aquinas wrote: "The slaying of an evildoer is lawful inasmuch as it is directed to the welfare of the whole community."

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When judiciously applied as a punishment for the willful killing of innocents, the death penalty serves to deter those who would murder and to protect society from those who have murdered. By reserving the ultimate penalty of death for those who wantonly kill, we are clearly proclaiming our special reverence for life. It is society's ultimate means of self-defense.

The death of a criminal can certainly be justified if it prevents the future deaths of innocent victims. Since death is the greatest punishment a society can impose, it stands to reason that it is the most powerful way to deter those who would commit a crime.

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Economist Isaac Ehrlich compared the murder rate in the United States with the rate of executions between 1933 and 1967. His conclusion: "The trade-off between the execution of an offender and the lives of potential victims it might have saved was of the order of magnitude of 1 for 8." In other words, each use of the death penalty seems to have deterred the killing of eight potential victims. Homicides decreased by almost 36 percent immediately following a well-publicized

40 execution, according to the research of sociologist David Phillips.

The absence of a death threat encourages crime. In 1950, when 82 criminals were executed, there were 7,020 homicides. In 1980, after a decade of virtual abandonment of the death penalty, there were 22,958 homicides, a 300 percent increase. As society became more concerned with the life of the criminal, lives of innocent victims became cheaper.

50 Another value of the death penalty is one that has been unfairly disparaged in the softhearted modern era; punishment for the sake of doing justice. Some attack this notion by labelling it retribution, and argue that our system should seek only deterrence and rehabilitation. Deterrence is important, but it is a practical and utilitarian consideration rather than a moral and just one. Rehabilitation is a worthy ideal, but justice demands more.

60 Without punishment for the sake of punishment, the age-old notion of justice falters.

One clear way we show our respect for life is to decree that those who unjustly take a life should forfeit their own. The crime of murder is so horrendous, so irrevocable, that it demands a commensurate punishment. Those who blithely dismiss retribution as barbaric are the ones who in fact demean the value of human life. As philosopher Ernest van den Haag says: "Life becomes cheaper as we become kinder to those who wantonly take it."

## Passage 2

75 Reverence for human life is part of the moral foundation of a just society. That is why no one can justly kill another; just as it is wrong for an individual to do so, it is wrong for the state to do so.

80 There is simply no convincing evidence that executions deter potential murders. In the reams of studies on the issue, only one serious work, that of economist Isaac Ehrlich, showed a correlation, and his analysis was soundly refuted by investigations into his procedures. The most thorough research is that of Professor J. Thorsten Sellin of the University of Pennsylvania, who compared the murder rate in similar communities that have and do not have the death penalty. His conclusions: "Capital executions have no demonstrable effect on homicide rates. Police are killed as frequently in death penalty states as in

abolitionist states . . . abolition or restoration of the death penalty has no demonstrable effect on the rate of subsequent homicides."

95 There is no logical reason to believe that capital punishment will deter murder any more effectively than a life prison term will. Murder is an irrational act, often a crime of passion. Those who kill tend not to balance the possible penalties against their desires.

100 The fact that capital punishment violates our ideal of rehabilitation is even more apparent, for the death penalty is absolute and irrevocable. It could permit the greatest injustice of all, the murder of an innocent person. Human beings are fallible, which is one reason they should not have power of life and death over each other. The number of murder convictions that have been discovered to be in error is a powerful argument against the death penalty.

110 Fundamentally, the argument boils down to the just role of the state. As part of the social contract, people surrender some of their natural rights to the state. But the state has no right to take an individual's life, just as no individual has that right over another. Most murders are committed for reasons of vengeance. We should not legitimize murderous vengeance by making it part of our system of justice.

**13** The first paragraph of Passage 1 suggests that individuals, communities, and countries

- (A) must categorically denounce violence
- (B) are using outdated theories of morality
- (C) each have different priorities
- (D) all have similar rights of self-protection
- (E) do not adequately punish criminals

**14** Passage 1 mentions Saint Thomas Aquinas as one who

- (A) denounces war
- (B) values the rights of individuals over those of society
- (C) supports the death penalty
- (D) was a former criminal
- (E) shares a common misconception

Both passages from *Pro & Con: Capital Punishment*, Walter Isaacson. ©1983 Stonesong Press, pp. 67–71



- 15** According to Passage 1, a society can proclaim its “special reverence for life” (lines 20–21) by
- (A) abstaining from declarations of war
  - (B) protecting those who are accused of crimes from physical retribution
  - (C) severely punishing those who kill others
  - (D) providing for the needs of the poor
  - (E) protecting children from abusive adults
- 16** Which of the following, if true, would most directly refute the argument made in the fifth paragraph (lines 43–47)?
- (A) Most Americans favor the death penalty.
  - (B) Executions have always been highly publicized events.
  - (C) In 1950, the electric chair was more widely used than lethal injection.
  - (D) Most criminals come from low-income families.
  - (E) Far fewer murder weapons were available and the population was much lower in 1950 than in 1980.
- 17** Which of the following best characterizes Ernest van den Haag’s attitude toward those who commit homicide, as it is presented in Passage 1?
- (A) utilitarian and practical
  - (B) harsh and uncompromising
  - (C) sympathetic
  - (D) scientifically analytical
  - (E) indifferent
- 18** The author of Passage 2 mentions “reams” (line 80) in order to emphasize
- (A) the dramatic effect of capital punishment in deterring crime
  - (B) the amount of legislation pertaining to capital punishment
  - (C) the many cases in which an innocent person has been executed for a crime
  - (D) the quantity of research that demonstrates no relationship between executions and future murder rates
  - (E) the extent to which the public disapproves of capital punishment
- 19** It can be inferred that “abolitionist states” (line 92) are those that
- (A) have eliminated the death penalty
  - (B) have more severe penalties for those who kill police officers than for those who kill non-officers
  - (C) use capital punishment intermittently
  - (D) use executions solely to deter future crimes
  - (E) do not have coherent laws regarding the punishment of those who commit homicide
- 20** In saying that “the death penalty is absolute” (line 103), the author of Passage 2 indicates that execution is
- (A) endorsed by legislative bodies
  - (B) supported by a majority of the population
  - (C) a deterrent for potential criminals
  - (D) an act that cannot be reversed
  - (E) foreign to most systems of morality
- 21** Which of the following topics does the author of Passage 2 discuss in both the first paragraph and the final paragraph?
- (A) revenge
  - (B) the social contract
  - (C) a just society
  - (D) rehabilitation
  - (E) motives for killing
- 22** Which of the following best characterizes the attitudes of the two passages toward the work of Isaac Ehrlich?
- (A) Both passages praise it, but also indicate minor flaws.
  - (B) Passage 1 cites it uncritically, but Passage 2 dismisses it.
  - (C) Both passages use it to support their theses.
  - (D) Passage 1 criticizes it on moral grounds, while Passage 2 criticizes it on scientific grounds.
  - (E) Passage 1 praises it highly, but Passage 2 abstains from evaluating it.

**23**

Which of the following best summarizes the position of each passage on the death penalty?

- (A) Both passages claim that it is ineffective.
- (B) Passage 1 claims that it is a moral duty, while Passage 2 claims that it is a practical necessity.
- (C) Passage 1 claims that it should be used only as a deterrent, while Passage 2 claims that it can be used for strictly punitive purposes.
- (D) Passage 1 claims that it is necessary to a just society, while Passage 2 claims that it is antithetical to a just society.
- (E) Passage 1 claims that it demeans life, while Passage 2 claims that it honors life.

**24**

Those who “attack this notion” (line 53) are most likely to include which of the following?

- (A) Saint Thomas Aquinas
- (B) The author of Passage 1
- (C) David Phillips
- (D) The author of Passage 2
- (E) Isaac Ehrlich

**STOP**

*You may check your work, on this section only, until time is called.*

# Section 2

Time—25 minutes

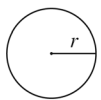
20 Questions (1–24)

## Directions for Multiple-Choice Questions

In this section, solve each problem, using any available space on the page for scratchwork. Then decide which is the best of the choices given and fill in the corresponding oval on the answer sheet.

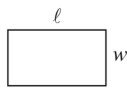
- You may use a calculator on any problem. All numbers used are real numbers.
- Figures are drawn as accurately as possible EXCEPT when it is stated that the figure is not drawn to scale.
- All figures lie in a plane unless otherwise indicated.

## Reference Information

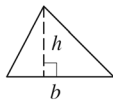


$$A = \pi r^2$$

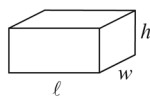
$$C = 2\pi r$$



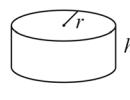
$$A = \ell w$$



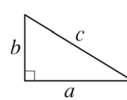
$$A = \frac{1}{2}bh$$



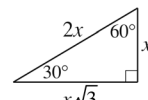
$$V = \ell wh$$



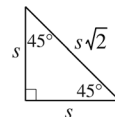
$$V = \pi r^2 h$$



$$c^2 = a^2 + b^2$$



Special Right Triangles



The arc of a circle measures  $360^\circ$ .

Every straight angle measures  $180^\circ$ .

The sum of the measures of the angles in a triangle is  $180^\circ$ .

2

- 1** Which of the following integers, when doubled, produces a number that is 2 greater than a multiple of 6?

(A) 5  
(B) 6  
(C) 7  
(D) 8  
(E) 9

- 3** If 4.5 zots are equivalent to 1 zat, how many zats are equivalent to 36 zots?

(A) 8  
(B) 9  
(C) 12  
(D) 16  
(E) 81

- 2** What is the circumference, in inches, of a circle with an area of  $16\pi$  square inches?

(A)  $2\pi$   
(B)  $4\pi$   
(C)  $8\pi$   
(D)  $16\pi$   
(E)  $32\pi$

**4**

1, 2, 1, 2, 1, 2, ...

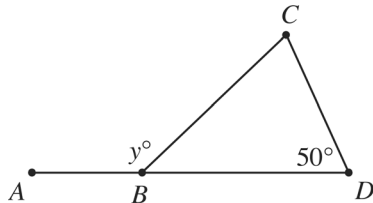
If the sequence above continues as shown, what is the sum of the first 20 terms?

(A) 20  
(B) 30  
(C) 40  
(D) 45  
(E) 60

2

- 5** Tom's weight is 20 pounds less than twice Carl's weight. If together Tom and Carl weigh 340 pounds, how much does Tom weigh?

- (A) 120 pounds  
 (B) 160 pounds  
 (C) 180 pounds  
 (D) 200 pounds  
 (E) 220 pounds

**6**

Note: Figure not drawn to scale.

In the figure above, if  $BC = BD$ , what is the value of  $y$ ?

- (A) 100  
 (B) 120  
 (C) 125  
 (D) 130  
 (E) 140

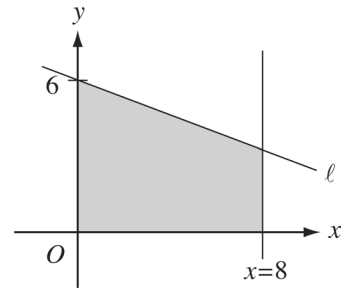
**7**

For all integers  $n$ , if  $*n$  is defined by the equation

$$*n = \begin{cases} \frac{n}{3} & \text{if } n \text{ is divisible by } 3 \\ 3n & \text{if } n \text{ is not divisible by } 3 \end{cases}$$

which of the following is equivalent to  $*10$ ?

- (A)  $*3$   
 (B)  $*9$   
 (C)  $*20$   
 (D)  $*30$   
 (E)  $*90$

**8**

Note: Figure not drawn to scale.

In the figure above, if line  $\ell$  has a slope of  $-1/2$ , what is the area of the shaded region, in square units?

- (A) 28  
 (B) 32  
 (C) 36  
 (D) 40  
 (E) 42

**9**

If each box of pencils contains  $x$  pencils, and if 10 boxes of pencils cost  $d$  dollars, how many dollars should it cost to buy  $50x$  pencils?

- (A)  $\frac{d}{5x}$   
 (B)  $\frac{x}{5d}$   
 (C)  $\frac{5}{dx}$   
 (D)  $5d$   
 (E)  $5dx$

**10**

Beth had planned to run an average of 6 miles per hour in a race. She had a very good race and actually ran at an average speed of 7 miles per hour, finishing 10 minutes sooner than she would have if she had averaged 6 miles per hour. How long was the race?

- (A) 6 miles  
 (B) 7 miles  
 (C) 18 miles  
 (D) 60 miles  
 (E) 70 miles

- 11** On a certain map that is drawn to scale, 1.5 centimeters is equivalent to 2 miles. If two cities are 35 miles apart, how many centimeters apart should they be on this map?

(A) 24.75  
 (B) 26.00  
 (C) 26.25  
 (D) 45.00  
 (E) 46.33

- 12** Jose needs a  $\frac{5}{8}$ -meter length of copper pipe to complete a project. Which of the following lengths of pipe can be cut to the required length with the least length of pipe left over?

(A)  $\frac{9}{16}$  meter  
 (B)  $\frac{3}{5}$  meter  
 (C)  $\frac{3}{4}$  meter  
 (D)  $\frac{4}{5}$  meter  
 (E)  $\frac{5}{6}$  meter

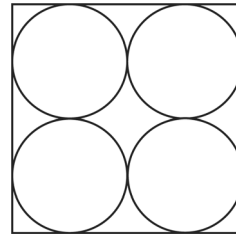
- 13** If  $\frac{1}{2}a = 2b = 4c = 24$ , what is the value of  $a + b + c$ ?

(A) 24  
 (B) 40  
 (C) 42  
 (D) 64  
 (E) 66

- 14** If  $x^2 > 6$ , which of the following statements must be true?

I.  $|x| > 3$   
 II.  $(x - 2)(x + 2) > 2$   
 III.  $x + 1,000 > 0$

(A) II only  
 (B) I and II only  
 (C) I and III only  
 (D) II and III only  
 (E) I, II, and III

**15**

Each of the four circles in the figure above is tangent to two sides of the square and also tangent to two of the other circles. If each circle has a circumference of  $4\pi$  inches, what is the area, in square inches, of the square?

(A) 4  
 (B) 16  
 (C) 24  
 (D) 32  
 (E) 64

**16**

$$abc + df + g$$

If the expression above is an odd number, then at most how many of the integers  $a$ ,  $b$ ,  $c$ ,  $d$ ,  $f$ , and  $g$  could be even?

(A) Two  
 (B) Three  
 (C) Four  
 (D) Five  
 (E) Six

**17**

The average (arithmetic mean) of six integers is 32. If the numbers are all different, and if none is less than 10, what is the greatest possible value of any of these integers?

(A) 127  
 (B) 132  
 (C) 137  
 (D) 142  
 (E) 147

**18** If  $(\frac{1}{4})^n = 2^{-3}$ , then  $n =$

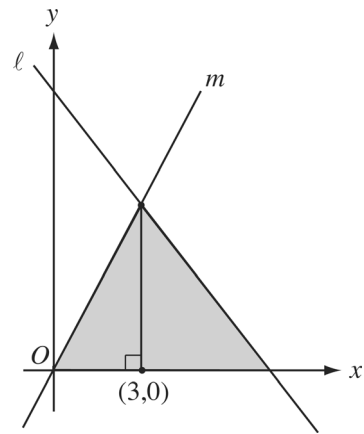
- (A)  $-\frac{3}{2}$   
 (B)  $-\frac{2}{3}$   
 (C)  $\frac{2}{3}$   
 (D)  $\frac{3}{2}$   
 (E) 3

2

**19** How many integers from 100 to 1,000 contain NO repeated digits? (Numbers like 252 and 991 are considered to have repeated digits.)

- (A) 632  
 (B) 648  
 (C) 720  
 (D) 810  
 (E) 900

**20**



*Note: Figure not drawn to scale.*

If line  $m$  in the figure above has a slope of 2 and the shaded triangle has an area of 24 square units, what is the slope of line  $\ell$ ?

- (A)  $-6$   
 (B)  $-\frac{6}{5}$   
 (C)  $-\frac{5}{6}$   
 (D)  $-\frac{2}{3}$   
 (E)  $-\frac{1}{3}$

**STOP**

**You may check your work, on this section only, until time is called.**

## Section 3

Time—25 minutes

24 Questions (25–48)

Each of the sentences below is missing one or two portions. Read each sentence. Then select the choice that most logically completes the sentence, taking into account the meaning of the sentence as a whole.

Example:

Rather than accepting the theory unquestioningly, Deborah regarded it with -----.

- (A) mirth
- (B) sadness
- (C) responsibility
- (D) ignorance
- (E) skepticism

*Correct response: (E)*

**25** Since the publisher had only allotted 250 pages to the book, the author's 400-page manuscript had to be drastically -----.

- (A) enhanced
- (B) pursued
- (C) accelerated
- (D) abridged
- (E) conducted

**26** The critics agreed that the first film was ----- and artistically daring; but that its sequel, in direct contrast, was bland and -----.

- (A) enchanting .. conventional
- (B) dull .. innovative
- (C) humorous .. unique
- (D) tedious .. pedestrian
- (E) trite .. foreign

**27** For an inveterate gambler, even ----- rewards reinforce the obsession, disproving the assumption that payoffs must be consistent to support an addiction.

- (A) luxurious
- (B) steadfast
- (C) sporadic
- (D) placid
- (E) continual

**28** Those who denied a ----- between exercise and ----- were surprised by the finding that those who walked at least 10 miles per week lived an average of 7 years longer than those who were sedentary.

- (A) causation .. exhaustion
- (B) relationship .. diet
- (C) dispute .. fulfillment
- (D) mediation .. prosperity
- (E) correlation .. longevity

**29** Even to physicists who study it for decades, subatomic physics is -----; to laypeople, then, it is downright -----.

- (A) forthcoming .. responsive
- (B) daunting .. fallow
- (C) cryptic .. routine
- (D) challenging .. inscrutable
- (E) fatuous .. singular

Each passage below is followed by one or two questions based on its content. Answer each question based on what is stated or implied in the passage that precedes it.

3

**Questions 30–31 are based on the following passage.**

Line *Media* is a term that describes a variety of people, structures, technologies, and relationships. Traditional definitions of media focus on messages that originate from some institutional source, travel through some channel, and reach a large, anonymous audience. Although these basic components of media are present today, their nature has changed with the advent of new electronic forms of communication. The current media environment does not always fit this description. Although previously constrained by cost, individuals can now offer messages inexpensively via the internet. Audiences for media messages are sometimes small and on occasion make themselves known to the producers of the messages.

**30** The passage suggests that, unlike traditional media, many new forms of media

- (A) originate from institutions
- (B) are anonymous
- (C) focus exclusively on selling products or services
- (D) are difficult to understand
- (E) are more accessible to users

**31** The tone of this passage is best described as

- (A) pleading
- (B) humorous
- (C) objective
- (D) skeptical
- (E) indignant

**Questions 32–33 are based on the following passage**

Line When mathematicians speak frankly about their discipline, they tend to circle around a fundamental question: are the ideas of mathematicians discovered or invented?

5 Mathematicians speak of proofs as “elegant” or “beautiful,” praising work for its aesthetic nature. Dr. Mina Rees, a logician, wrote, “Mathematics is both inductive and deductive, needing, like poetry, persons who are creative and have a sense of the beautiful for its surest progress.” But, even so, most mathematicians say that when they do their work they are making discoveries—the great ideas of mathematics exist independently of them. They stumble upon these ideas, awkwardly, perhaps, but eventually finding truths of nature.

Dr. John Conway, for one, cannot imagine he is doing anything but discovering results that exist without him and that he did not create. Why? “Because they couldn’t be otherwise than what they are,” he said. “Two and two might be five and pigs might fly. But in the world I come from, two and two are four and pigs don’t fly.”

**32** The quotation in lines 8–11 (“Mathematics is both . . . its surest progress”) makes the point that

- (A) mathematicians are often very good writers
- (B) aesthetic sense is an asset to mathematical thought
- (C) many mathematical claims cannot be proved
- (D) mathematical truths are discovered, not invented
- (E) poets have made many contributions to mathematical progress

**33** The quotation in lines 21–24 (“Two and two . . . don’t fly”) is intended to refute the idea that

- (A) mathematical discoveries do not require intuition
- (B) mathematical proofs are beautiful
- (C) mathematicians do not require formal education to make profound discoveries
- (D) logic is never violated in mathematics
- (E) mathematical truths are open to interpretation

First paragraph: *Persuasion in the Media Age*, Timothy A. Borchers. ©2002 McGraw-Hill, p. 82

Second paragraph: “*Scientists at Work*,” Science Times. ©2000 McGraw-Hill, p. 99



**Questions 34–40 are based on the following passage.**

*The following is an excerpt from a book about American journalism that was written in 1939.*

Line It is singular that newspapers, seldom  
bashful about their virtues, have made so little  
to-do about their achievements in crusading. As  
champions of reforms, as defenders of  
5 individuals, as protagonists of their  
communities, they have exercised influences  
quite as important as the transmission of  
information and the expression of opinion.

10 Yet this has been written only in  
fragmentary form. Historians of daily journals,  
biographers of newspaper publishers and  
editors, and occasionally an instructor in a  
school of journalism, have dealt with it in  
particular, sometimes in its larger aspects, but  
15 not sweepingly. A treatment at once minute and  
comprehensive, indeed, is impossible within  
the scope of a single volume, such is the wealth  
of material available. What is presented here  
must attempt a representative selection.

20 More than once a newspaper, at the  
conclusion of a successful campaign, has  
preened itself or has paid tribute to a fellow. Yet  
by and large our most articulate institution,  
sometimes almost as vainglorious as politics,  
25 has been surprisingly reticent about one of its  
primary responsibilities. It has nevertheless  
recognized crusading as a natural function and  
as a responsibility, and has discharged it for the  
most part admirably, sometimes at severe  
30 sacrifice. That there has been default in certain  
areas none can deny, but the account balances  
heavily to the credit of the press and to the  
benefit of the public.

35 Here lies the best argument for newspaper  
freedom not only from governmental  
interference but from the coercion of a  
capitalist economy. The history of our press  
since colonial days is shot through with the  
struggle for unrestricted capital activity and the  
40 right to crusade. Every crusade implies, to be  
sure, the expression of opinion or of an attitude,  
but it involves more than that. It means also a  
willingness to fight if need be. It means,  
according to my dictionary, “to contend  
45 zealously against any evil, or on behalf of any  
reform.”

To contend zealously must mean surely to  
struggle with ardent devotion. The zeal which  
fires a crusading editor may bring him to the

50 boiling point of fanaticism, and has done it time  
and again. None who has undertaken a  
campaign in the certainty that it would entail  
loss of circulation and advertising, perhaps  
permanently, was not a fanatic, just on the  
55 sunny side of lunacy. Skeptics who deny that  
campaigns are ever undertaken for other than  
sordid motives may disabuse their minds by  
examining the record. If newspapers have faced  
actual losses in the discharge of their duties as  
60 public servants, then they have an  
unmistakable claim to the guarantee of the  
First Amendment.

**34** The author’s attitude toward newspapers is best described as

- (A) laudatory
- (B) objectively analytical
- (C) exasperated
- (D) jocular
- (E) harshly critical

**35** In the first paragraph, the author indicates surprise at the fact that newspapers

- (A) are still profitable
- (B) are not more widely read
- (C) transmit so little information that is worthy of notice
- (D) do not exercise more influence in their communities
- (E) have not acknowledged one of their virtues

**36** The “wealth of material” (lines 17–18) is information about

- (A) the means by which reporters get their information
- (B) the corporate structure of certain newspapers
- (C) the reading practices of Americans
- (D) the ability of newspapers to effect change in their communities
- (E) the relationship between newspapers and other media

*Newspaper Crusaders: A Neglected Story*, Silas Bent. ©1939 McGraw-Hill pp. 3-4. Printed with permission of Ayer Company Publishers.

**37** As it is used in line 28, “discharged” most nearly means

- (A) electrified
- (B) dismissed
- (C) accomplished
- (D) emitted
- (E) refused

3

**38** The “skeptics” (line 55) believe that newspapers

- (A) are becoming less popular
- (B) are fundamentally self-serving
- (C) are fanatical about political causes
- (D) do not take advantage of the First Amendment
- (E) should be replaced by other forms of media

**39** As it is used in line 49, “fires” most nearly means

- (A) destroys
- (B) dismisses
- (C) initiates
- (D) stimulates
- (E) interrogates

**40** The final paragraph suggests that crusading poses a potential danger to newspapers by

- (A) causing a loss of revenue
- (B) increasing competition with other newspapers
- (C) encouraging reporters to abandon journalistic principles
- (D) restricting the freedom of journalists
- (E) spurring good journalists to quit their jobs

**Questions 41–48 are based on the following passage.**

*The following passage discusses some of the work of Henri Matisse, an influential twentieth-century French artist.*

Line Henri Matisse wrote in a 1948 letter:

*I have always tried to hide my own efforts and wished my work to have the lightness and joyousness of a springtime which never lets anyone know the labors it has cost. So I am*

5

*afraid the young, seeing in my work only the apparent facility and negligence in the drawing, will use this as an excuse for dispensing with certain efforts I believe necessary.*

10 Matisse’s *The Flowing Hair*, made of cut and pasted paper, appears so unlabored that one might misunderstand all that is behind and went before it. Few would guess that a work as lively and energetic as *The Flowing Hair* was  
15 executed by a man eighty-three years old. Moreover, *The Flowing Hair* is just one work in an entire cut paper series of joyous, colorful pieces suggesting dance and music.

20 *The Flowing Hair* shows no three-dimensional modeling of the forms or shadows. The female form is depicted as an intense blue shape of flowing curves, a graceful rhythmic arabesque. The whole figure—arms, legs, torso, even the hair—seems to be in motion. The  
25 footless legs have strength, and the arms have almost become wings. One feels that at any moment the figure might dance off the paper.

How did Matisse, as an old man, come to create such vital works? One answer is his  
30 development of a new art form: cut paper, or as it is called in French, *Papier collé*, *Papier découpé*, or *découpage*. Partly crippled by illness and repeated surgery in 1941, Matisse came to rely on the less strenuous medium of cut paper,  
35 rather than oil painting, as his major art form. He could work in the new art form lying down in his bed or from his chair. He had studio assistants paint expanses of paper in brilliant hues of gouache, an opaque watercolor paint,  
40 to his requirements. The old master then cut shapes directly out of the paper without any preparatory drawings. He felt he was drawing with scissors. He loved the directness of the process of cutting. After the shapes were cut,  
45 Matisse instructed his assistants to pin the pieces onto his studio wall. The many tiny pinholes in the paper show that Matisse had his helpers adjust the arrangement of the cutouts numerous times until the most expressive spatial relationship had been achieved.  
50

Out of the painted, cut, and pasted papers arose a self-sufficient medium of great pictorial strength. Cutting paper with scissors gave him a very strong feeling for line and enabled him to develop forms of great simplicity and economy. Yet Matisse did not use his scissors to declare war on drawing and painting. Rather, his

scissors were an extension of pencil, charcoal  
 60 stick, and paintbrush. “My découpages,” he  
 stated, “do not break away from my former  
 pictures. It is only that I have achieved more  
 completely and abstractly a form reduced to the  
 essential, and have retained the object, no  
 65 longer in the complexity of its space, but as the  
 symbol which is both sufficient and necessary  
 to make the object exist in its own right, as well  
 as for the composition in which I have  
 conceived it.”

Old and crippled, Matisse could have rested  
 70 on the laurels of his past accomplishments. But  
 not Matisse. He truly enjoyed the challenge, the  
 directness, the intimacy of his new approach to  
 collage. He relished the opportunity to select,  
 place, and reposition the cut paper shapes. His  
 75 habit of hard work in the studio was so deeply  
 rooted and his creative vitality was so strong  
 that he let nothing, not even bad health,  
 interrupt his art. In the end, Matisse came to  
 esteem his cut paper works as the high point of  
 80 his creative career.

- 41** The central purpose of this passage is to
- (A) contrast the artistic works of Henri Matisse with those of his contemporaries
  - (B) enumerate the merits of *The Flowing Hair*
  - (C) analyze a controversy regarding the life of Henri Matisse
  - (D) describe the development of a new art form
  - (E) examine several artistic movements of the early twentieth century

- 42** The quotation in lines 2–9 suggests that Matisse was concerned about people thinking that his work
- (A) was created in an inferior medium
  - (B) required less effort than it actually did
  - (C) evoked dark themes
  - (D) was not valuable
  - (E) too closely imitated the work of other artists

**43** The author mentions that Matisse was “eighty-three years old” (line 15) primarily in order to

- (A) emphasize the influence Matisse had on the art world in general
- (B) indicate that Matisse had begun his artistic career late in life
- (C) refute the misconception that Matisse died young
- (D) contrast Matisse’s artistic style with that of the younger generation of artists
- (E) contrast the litheness of Matisse’s work with his physical condition

**44** In line 38, the word “brilliant” most nearly means

- (A) intelligent
- (B) flimsy
- (C) celebrated
- (D) shining
- (E) intimidating

**45** The quotation from Matisse in lines 59–68 emphasizes which of the following qualities of *découpage*?

- (A) pictorial simplicity
- (B) changeability
- (C) vividness
- (D) three-dimensionality
- (E) transparency

**46** The “intimacy” mentioned in line 72 characterizes the relationship between Matisse and

- (A) his critics
- (B) his fellow artists
- (C) his medium
- (D) his philosophy
- (E) his assistants

**47**

The passage indicates that the medium of cut paper provided Matisse with all of the following EXCEPT

- (A) ease of use
- (B) the ability to manipulate forms
- (C) pictorial strength
- (D) the feeling of depth
- (E) vitality

**48**

The final paragraph characterizes Matisse primarily as

- (A) weak and ineffective
- (B) popular and outgoing
- (C) enthusiastic and diligent
- (D) sober and intellectual
- (E) critical and irascible

**3**

*You may check your work, on this section only, until time is called.*

# Section 4

Time—25 minutes

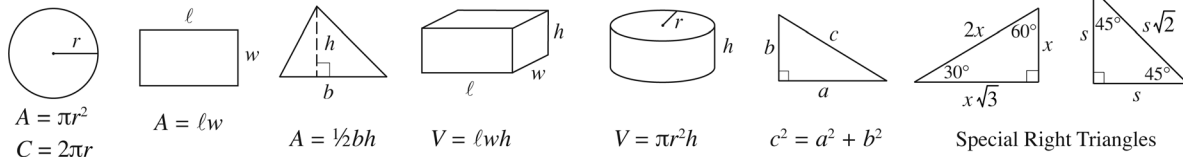
18 Questions (21–38)

### Directions for Multiple-Choice Questions

In this section, solve each problem, using any available space on the page for scratchwork. Then decide which is the best of the choices given and fill in the corresponding oval on the answer sheet.

- You may use a calculator on any problem. All numbers used are real numbers.
- Figures are drawn as accurately as possible EXCEPT when it is stated that the figure is not drawn to scale.
- All figures lie in a plane unless otherwise indicated.

### Reference Information



The arc of a circle measures  $360^\circ$ .  
 Every straight angle measures  $180^\circ$ .  
 The sum of the measures of the angles in a triangle is  $180^\circ$ .

- 21** If  $\frac{18}{15} = \frac{x}{5}$ , then  $x =$
- (A)  $\frac{6}{5}$
- (B) 3
- (C)  $\frac{75}{18}$
- (D) 6
- (E) 54

- 22** What is the height of a triangle with a base of 6 inches and an area of 24 square inches?
- (A) 12 inches
- (B) 8 inches
- (C) 6 inches
- (D) 4 inches
- (E) 2 inches

- 23** Copies of *Artist's World* Magazine Sold

2002	   
2003	      

 = 20,000 copies

According to the chart above, how many more copies of *Artist's World* were sold in 2003 than in 2002?

- (A) 2,500
- (B) 5,000
- (C) 25,000
- (D) 50,000
- (E) 250,000

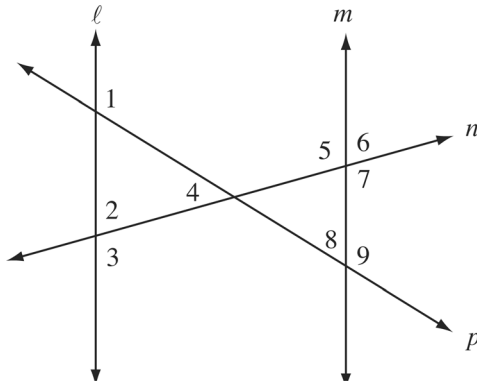
**24** What number is 24 less than 3 times itself?

- (A) 12
- (B) 24
- (C) 36
- (D) 48
- (E) 72

**26** The average (arithmetic mean) of 0,  $a$ , and  $b$  is  $2a$ . What is the value of  $b$  in terms of  $a$ ?

- (A)  $a$
- (B)  $2a$
- (C)  $3a$
- (D)  $4a$
- (E)  $5a$

**25**



In the figure above, line  $\ell$  is parallel to line  $m$ . Which of the following pairs of angles must have equal measures?

- I. 1 and 9
  - II. 2 and 8
  - III. 5 and 7
- (A) I only
  - (B) II only
  - (C) III only
  - (D) I and II only
  - (E) I and III only

**27** If  $a$ ,  $b$ , and  $c$  are integers greater than 1, and if  $ab = 21$  and  $bc = 39$ , which of the following must be true?

- (A)  $a < b < c$
- (B)  $a < c < b$
- (C)  $b < a < c$
- (D)  $b < c < a$
- (E)  $c < a < b$

**28** David, Charlene, and Rudy earned a total of \$22.00 yesterday. If Charlene earned three times as much as David did, and Rudy earned \$2.50 less than Charlene did, then how much money did Rudy earn?

- (A) \$3.50
- (B) \$5.50
- (C) \$8.00
- (D) \$10.50
- (E) \$11.00

**Directions for Student-Produced Response Questions**

Each of the questions in this section requires you to solve the problem and enter your answer in a grid, as shown below.

- If your answer is  $\frac{2}{3}$  or  $.666\dots$ , you must enter **the most accurate value the grid can accommodate**, but you may do this in one of four ways:

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- In the example above, gridding a response of 0.67 or 0.66 is **incorrect** because it is less accurate than those above.
- The scoring machine cannot read what is written in the top row of boxes. You **MUST** fill in the numerical grid accurately to get credit for answering any question correctly. You should write your answer in the top row of boxes only to aid your gridding.
- Do **not** grid in a mixed fraction like  $3\frac{1}{2}$  as 

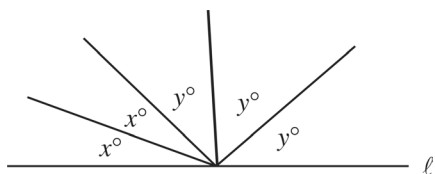
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 because it will be interpreted as  $\frac{31}{2}$ . Instead, convert it to an improper fraction like  $\frac{7}{2}$  or a decimal like 3.5 before gridding.
- None of the answers will be negative, because there is no negative sign in the grid.
- Some of the questions may have more than one correct answer. You must grid only one of the correct answers.
- You may use a calculator on any of these problems.
- All numbers in these problems are real numbers.
- Figures are drawn as accurately as possible EXCEPT when it is stated that the figure is not drawn to scale.
- All figures lie in a plane unless otherwise indicated.

**29** The ratio of 2.5 to 16 is the same as the ratio of .25 to what number?

**30** For all real numbers  $x$  and  $y$ , let  $x \Delta y$  be defined by the equation  $x \Delta y = (xy) - (x + y)$ . What is the value of  $12 \Delta 6$ ?

31



Note: Figure not drawn to scale.

In the figure above, if  $x = 24$ , what is the value of  $y$ ?

4

32

One deck of cards consists of six cards numbered 1 through 6, and a second deck consists of six cards numbered 7 through 12. If one card is chosen at random from each deck, and the numbers on these cards are multiplied, what is the probability that this product is an even number?

33

When an integer  $m$  is divided by 5, the remainder is 3. When  $m$  is divided by 7, the remainder is 1. If  $m$  is greater than 40 but less than 80, what is one possible value of  $m$ ?

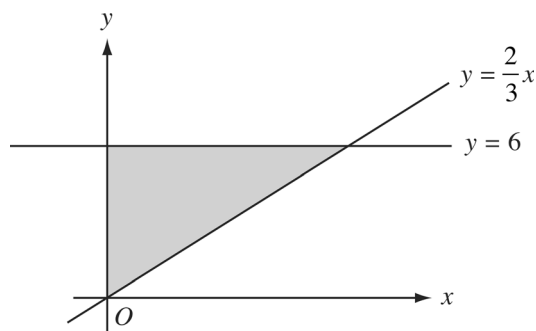
34

If  $(2x^2 + 5x + 3)(3x + 1) = ax^3 + bx^2 + cx + d$  for all values of  $x$ , what is the value of  $c$ ?

35

In a sequence of numbers, each term except the first is 4 less than 4 times the previous term. If the fourth term in this sequence is 12, what is the first term?

36



Note: Figure not drawn to scale.

In the figure above, the shaded triangle is bounded by the  $y$ -axis, the line  $y = 6$ , and the line  $y = \frac{2}{3}x$ . What is the area, in square units, of the shaded triangle?

37

The value of  $\frac{2x + 10}{5} + \frac{3x - 2}{5}$  is how much greater than the value of  $x$ ?

38

If  $9\left(\frac{1}{3}\right)^n = (3^m)$ , what is the value of  $m + n$ ?

**STOP**

**You may check your work, on this section only, until time is called.**



# Section 5

Time—30 minutes

39 Questions (1–39)

## Directions for “Improving Sentences” Questions

Each of the sentences below contains one underlined portion. The portion may contain one or more errors in grammar, usage, construction, precision, diction (choice of words), or idiom. Some of the sentences are correct.

Consider the meaning of the original sentence, and choose the answer that best expresses that meaning. If the original sentence is best, choose (A), because it repeats the original phrasing. Choose the phrasing that creates the clearest, most precise, and most effective sentence.

EXAMPLE:

The children couldn't hardly believe their eyes.

- (A) couldn't hardly believe their eyes
- (B) would not hardly believe their eyes
- (C) could hardly believe their eyes
- (D) couldn't nearly believe their eyes
- (E) could hardly believe his or her eyes

(A) (B) ● (D) (E)

5

**1** As a young boy, was when Francis discovered that he could spend his life exploring the ocean he loved so much.

- (A) was when Francis discovered that he could spend his life
- (B) that was when Francis discovered that he could spend his life
- (C) Francis discovered then that his life could be spent
- (D) Francis discovered that he could spend his life
- (E) Francis discovered the spending of his life

**2** Paleontologists disputed the authenticity of the discovery, it was believed rather that it was an elaborate hoax.

- (A) discovery, it was believed rather that
- (B) discovery; they believed that
- (C) discovery; but instead they believed that
- (D) discovery in believing that
- (E) discovery, it being believed that

**3** Although the race was only five minutes long, James got out of the pool feeling as if swimming across the English Channel.

- (A) swimming
- (B) having swam
- (C) he had swum
- (D) he were swimming
- (E) in swimming

**4** People often sign life insurance contracts even before the provisions and contingencies of their policies are known by them.

- (A) the provisions and contingencies of their policies are known by them
- (B) the provisions and contingencies of their policies being known by them
- (C) the provisions of their policies are known by them, or the contingencies
- (D) they know the provisions and contingencies of their policies
- (E) they know neither the provisions nor the contingencies of their policies

**5** A major hurdle to educational reform is parents expect the school experience to be the same as it was decades ago.

- (A) parents expect the school experience to be
- (B) parents that are expecting the school experience being
- (C) parents are expecting that the school experience be
- (D) that parents expect the school experience being
- (E) that parents expect the school experience to be

5

**6** Perelman was an essayist and travel writer and many generations of humorists were inspired by him, such as Woody Allen.

- (A) and many generations of humorists were inspired by him, such as Woody Allen
- (B) who inspired many generations of humorists such as Woody Allen
- (C) that inspired many generations, such as Woody Allen, of humorists
- (D) by whom many generation of humorists, like Woody Allen, were inspired
- (E) of whom many generations of humorists, such as Woody Allen, were inspired

**7** The fact is every human language shares a basic underlying structure, this a discovery of Noam Chomsky.

- (A) The fact is every human language shares a basic underlying structure, this a discovery of Noam Chomsky.
- (B) Noam Chomsky having discovered that every human language shares a basic underlying structure.
- (C) Every human language shares a basic underlying structure and this Noam Chomsky discovered.
- (D) The fact of every human language sharing a basic underlying structure was discovered by Noam Chomsky.
- (E) Noam Chomsky discovered that every human language shares a basic underlying structure.

**8** We would not be such an obese nation if we had to hunt and gather our food as our ancestors did.

- (A) we had to hunt and gather our food as our ancestors did
- (B) hunting and gathering of our food was required of us as our ancestors
- (C) we had to hunt and gather our food as our ancestors were doing
- (D) our hunting and gathering of food was as required of us as our ancestors
- (E) we had to be hunting and gathering our food like our ancestors

**9** When your body is more erect, one's mind is more alert.

- (A) one's mind is more alert
- (B) your mind is more alert
- (C) your mind's alertness is greater
- (D) the alertness of one's mind increases
- (E) the mind is alerter

**10** The reason the tent fell over was that we did not anchor the center pole.

- (A) that we did not anchor the center pole
- (B) because we did not anchor the center pole
- (C) we did not anchor the center pole
- (D) for our not anchoring the center pole
- (E) because of our not anchoring the center pole

**11** Unable to meet all of its costs with such meager revenue, bankruptcy could not be avoided by the small company.

- (A) bankruptcy could not be avoided by the small company
- (B) the small company's bankruptcy could not be avoided
- (C) the small company could not avoid bankruptcy
- (D) it was not possible for the small company to avoid bankruptcy
- (E) the bankruptcy of the small company could not be avoided

**12** The medium of watercolor requires precise brushwork, careful timing and planning must be meticulous.

- (A) careful timing and planning must be meticulous
- (B) the timing careful, and the planning meticulous
- (C) care in the timing, and meticulous planning
- (D) careful timing, and meticulous planning
- (E) care in the timing, and meticulousness in the planning

**13** Many visitors were impressed by the monument's sheer size, but for others it was its solemn gravity.

- (A) size, but for others it was
- (B) size; but others thought it was
- (C) size, others were impressed by
- (D) size and not, like for others,
- (E) size; others by

**14** Finding the mountain pass treacherous, the safest thing, the expedition leader decided, was to stay in camp another night.

- (A) the safest thing, the expedition leader decided, was to stay in camp another night
- (B) the expedition leader decided that it would be safest to stay in camp another night
- (C) staying in camp another night was the safest thing, the expedition leader decided
- (D) the expedition leader, deciding that the safest thing to do was to stay in camp another night
- (E) it was safest to stay in camp another night, the expedition leader decided

**15** Most educators believe peers teach students more values than their school curricula.

- (A) peers teach students more values than their
- (B) it's more their peers that teach students values than their
- (C) that students learn more about values from their peers than from their
- (D) values are taught more by their peers than from a student's
- (E) that students learn more from their peers about values than their

**16** The scientists decided to shut down the robot to conserve its energy while they worked to fix its processor.

- (A) to conserve its energy while they worked to fix
- (B) for conserving its energy while they worked on fixing
- (C) to conserve its energy and working to fix
- (D) in conserving its energy and in order to work on fixing
- (E) with regards to conserving its energy as they were working to fix

**17** Those critics who deny that films ever do justice to literary masterpieces, often failing to recognize the unique limitations of each art form.

- (A) masterpieces, often failing
- (B) masterpieces in often failing
- (C) masterpieces often fail
- (D) masterpieces, and so often fail
- (E) masterpieces would nevertheless often fail

**18** The professor asserted that, although ancient hominids were likely very intelligent, there is little hard evidence of its being true.

- (A) of its being true
- (B) of its truth
- (C) that it is the truth
- (D) of support to the claim
- (E) supporting this claim

**19**

I sometimes prefer making a selection based on the advice of a friend over my own analysis.

- (A) making a selection based on the advice of a friend over
- (B) to base a selection on the advice of a friend rather than on
- (C) basing a selection on the advice of a friend more than
- (D) making a selection based rather on the advice of a friend instead of
- (E) to make a selection based on what a friend says rather than

**20**

Marcus, who threw a remarkable pass to Reggie for a touchdown, could not have completed the play if Doug had not made a stunning block.

- (A) could not have completed the play if Doug had not made a stunning block
- (B) would not complete the play if Doug did not make a stunning block
- (C) if it was not Doug's stunning block, then could not have completed the play
- (D) didn't complete the play if not for Doug's stunning block
- (E) would not have completed the play but Doug made a stunning block

**Directions for “Identifying Sentence Error” Questions**

The following sentences may contain errors in grammar, usage, diction (word choice), or idiom. Some of the sentences are correct. No sentence contains more than one error.

If the sentence contains an error, it is underlined and lettered. The parts that are not underlined are correct.

If there is an error, select the part that must be changed to correct the sentence.

If there is no error, choose (E).

EXAMPLE:

By the time they reached the halfway point  
in the race, most <sup>A</sup> of the runners hadn't hardly  
<sup>B</sup> <sup>C</sup> <sup>D</sup>  
 begun to hit their stride. No error  
<sup>E</sup>

(A) (B) (C) (D) (E)

5

- 21** In the basket was several savory treats that  
<sup>A</sup> <sup>B</sup> <sup>C</sup>  
 Helene knew her friends would enjoy.  
<sup>D</sup>  
No error  
<sup>E</sup>
- 22** Our girl scout troop has already raised twice  
 as much money for the children's hospital  
<sup>B</sup> <sup>A</sup> <sup>C</sup>  
 this year as last year. No error  
<sup>D</sup> <sup>E</sup>
- 23** Since she was committed to becoming a  
<sup>A</sup>  
 great stage performer, Noelle studied not  
<sup>B</sup> <sup>C</sup>  
 only voice and acting, and dancing and  
<sup>D</sup>  
 stage combat as well. No error  
<sup>E</sup>
- 24** Never seeing a giraffe before, even  
<sup>A</sup>  
 in a picture book, Dina was astonished to  
<sup>B</sup> <sup>C</sup>  
 come face to face with one at the city zoo.  
<sup>D</sup>  
No error  
<sup>E</sup>
- 25** Having injured herself in an unfortunate  
<sup>A</sup>  
 stage accident during the opening act, the  
 lead actress could no longer precede in her  
<sup>B</sup>  
 role, and had to be replaced  
<sup>C</sup>  
 by her understudy. No error  
<sup>D</sup> <sup>E</sup>
- 26** Ricardo, like so many other freshmen  
<sup>A</sup>  
on the varsity team, were intimidated by  
<sup>B</sup> <sup>C</sup>  
 both the size and the aggressiveness of his  
<sup>D</sup>  
 teammates. No error  
<sup>E</sup>
- 27** Having spent enormous sums on infrastruc-  
<sup>A</sup>  
 ture, many new companies must operate  
<sup>B</sup>  
 successfully for many years before they  
<sup>C</sup>  
can recover their initial investments.  
<sup>D</sup>  
No error  
<sup>E</sup>
- 28** As a former lead researcher  
 at a major observatory, our professor is able  
<sup>A</sup> <sup>B</sup>  
 to provide many insights on the most current  
<sup>C</sup> <sup>D</sup>  
 astronomical research. No error  
<sup>E</sup>
- 29** We were surprised at how close the two  
<sup>A</sup>  
 sisters resembled each other, even though  
<sup>B</sup>  
 they were actually fraternal,  
<sup>C</sup>  
rather than identical, twins. No error  
<sup>D</sup> <sup>E</sup>

**30** The inspiring movies of Frank Capra, unlike many modern directors, capture the most hopeful aspects of American life. No error

A B C D E

**31** Such tragedies as the tsunami of December 2004 show the extent to which nature can devastate vast areas in a very brief time. No error

A B C D E

**32** Although they often roam in packs in which they must cooperate, the hyena employs subtle signs of dominance and submission within their groups. No error

A B C D E

**33** When examining the letters and tape recordings from the Oval Office, the extent of the deception and illicit behavior of the President becomes obvious. No error

A B C D E

**34** Meryl Streep has avoided vocal stereotyping, so common among famous actors, by adapting her voice with uncanny fluency to fit characters with many different nationalities. No error

A B C D E

### Directions for "Improving Paragraphs" Questions

Below is an early draft of an essay. It requires revision in many areas.

The questions that follow ask you to make improvements in sentence structure, diction, organization, and development. Answering the questions may require you to understand the context of the passage as well as the rules of standard written English.

### Questions 35–39 pertain to the following passage.

(1) *When buying consumer goods, we rarely think beyond what we want and what they cost.* (2) *But there are two other important questions we should be asking: where did they come from? and where are they going?* (3) *Unlike long ago, when our consumer goods were usually made locally, we usually don't know the history of the things we buy.* (4) *And then, when we throw it out, or its packaging, we put it out of our minds.*

(5) *The manufacturers of some products, like paper and wood, employ unsustainable methods that destroy forests irrevocably.* (6) *This provides income for local workers, but then soon they must move on because they have rendered the environment unlivable.*

(7) *Other manufacturers employ slave labor, prison labor, or child labor to create cheap products like clothing or electronic equipment.*

(8) *Some believe that producers should be permitted to search for the cheapest possible labor to make a good profit, but not if it means being inhumane to workers.*

(9) *Many consumer items contain dangerous chemicals that end up poisoning streams and groundwater.* (10) *In order to turn a short-term profit, manufacturers sometimes sacrifice whole ecosystems for generations to come.*

(11) *We cannot afford to be ignorant of where our consumer goods come from or where they are going.* (12) *As cogs in the machine of consumerism, we are as much responsible as the manufacturers themselves for the pollution and injustices that these items may cause.*

- 35** Which of the following is the best revision of the underlined portion of sentence 3 (reproduced below)?

*Unlike long ago, when our consumer goods were usually made locally, we usually don't know the history of the things we buy.*

- (A) we don't hardly
- (B) today we rarely
- (C) the consumers of today don't usually
- (D) it's less likely today that we
- (E) it's not as likely to

- 36** In context, which of the following is the best version of sentence 4 (reproduced below)?

*And then, when we throw it out, or its packaging, we put it out of our minds.*

- (A) We also rarely give much thought to where these items, or their packaging, will go when we discard them.
- (B) Nevertheless, we also rarely think of where these items or their packaging will end up when we throw them out.
- (C) We also rarely think about where it, or its packaging, goes when we throw it out.
- (D) Then, when we throw them out, it's out of our minds.
- (E) Throwing them out is what simply puts them out of our minds.

- 37** In context, which of the following is the best version of the underlined portion of sentence 6 (reproduced below)?

*This provides income for local workers, but then soon they must move on because they have rendered the environment unlivable.*

- (A) (as it is now)
- (B) This is good for some local workers in providing income, but bad in making them move because they have rendered
- (C) Which provides income for local workers, but forces them to move because it has rendered
- (D) Although providing income for local workers, it forces them to move by rendering
- (E) Although such methods provide income for local workers, they also soon force the workers to move on by rendering

- 38** In context, which of the following is the best version of the underlined portion of sentence 8 (reproduced below)?

*Some believe that producers should be permitted to search for the cheapest possible labor to make a good profit, but not if it means being inhumane to workers.*

- (A) (as it is now)
- (B) but even though that means being inhumane to workers
- (C) but sometimes this search leads to inhumane practices
- (D) and that means being inhumane to workers
- (E) but it shouldn't mean being inhumane to workers

- 39** Which of the following sentences, if placed before sentence 9 to begin the fourth paragraph, would provide the most logical transition?

- (A) The low prices of such items hardly seem worth it.
- (B) It really doesn't take much effort to become aware of some of the problems in manufacturing.
- (C) Some consumers are becoming aware of these problems and changing their buying habits.
- (D) We should consider not only the manufacture of consumer goods, but their disposal as well.
- (E) Many manufacturers, however, are more responsible in their practices.



**You may check your work, on this section only, until time is called.**

## ANSWER KEY

Section 1 Critical Reading	Section 3 Critical Reading	Section 2 Math	Section 4 Math	Section 5 Writing
<input type="checkbox"/> 1. A	<input type="checkbox"/> 25. D	<input type="checkbox"/> 1. C	<input type="checkbox"/> 21. D	<input type="checkbox"/> 1. D
<input type="checkbox"/> 2. C	<input type="checkbox"/> 26. A	<input type="checkbox"/> 2. C	<input type="checkbox"/> 22. B	<input type="checkbox"/> 2. B
<input type="checkbox"/> 3. E	<input type="checkbox"/> 27. C	<input type="checkbox"/> 3. A	<input type="checkbox"/> 23. D	<input type="checkbox"/> 3. C
<input type="checkbox"/> 4. B	<input type="checkbox"/> 28. E	<input type="checkbox"/> 4. B	<input type="checkbox"/> 24. A	<input type="checkbox"/> 4. D
<input type="checkbox"/> 5. E	<input type="checkbox"/> 29. D	<input type="checkbox"/> 5. E	<input type="checkbox"/> 25. E	<input type="checkbox"/> 5. E
<input type="checkbox"/> 6. B	<input type="checkbox"/> 30. E	<input type="checkbox"/> 6. A	<input type="checkbox"/> 26. E	<input type="checkbox"/> 6. B
<input type="checkbox"/> 7. A	<input type="checkbox"/> 31. C	<input type="checkbox"/> 7. E	<input type="checkbox"/> 27. C	<input type="checkbox"/> 7. E
<input type="checkbox"/> 8. A	<input type="checkbox"/> 32. B	<input type="checkbox"/> 8. B	<input type="checkbox"/> 28. C	<input type="checkbox"/> 8. A
<input type="checkbox"/> 9. E	<input type="checkbox"/> 33. E	<input type="checkbox"/> 9. D		<input type="checkbox"/> 9. B
<input type="checkbox"/> 10. B	<input type="checkbox"/> 34. A	<input type="checkbox"/> 10. B	# Right (A):	<input type="checkbox"/> 10. A
<input type="checkbox"/> 11. A	<input type="checkbox"/> 35. E	<input type="checkbox"/> 11. C	_____	<input type="checkbox"/> 11. C
<input type="checkbox"/> 12. C	<input type="checkbox"/> 36. D	<input type="checkbox"/> 12. C	# Wrong (B):	<input type="checkbox"/> 12. D
<input type="checkbox"/> 13. D	<input type="checkbox"/> 37. C	<input type="checkbox"/> 13. E	_____	<input type="checkbox"/> 13. E
<input type="checkbox"/> 14. C	<input type="checkbox"/> 38. B	<input type="checkbox"/> 14. A	# (A) $-\frac{1}{4}$ (B):	<input type="checkbox"/> 14. B
<input type="checkbox"/> 15. C	<input type="checkbox"/> 39. D	<input type="checkbox"/> 15. E	_____	<input type="checkbox"/> 15. C
<input type="checkbox"/> 16. E	<input type="checkbox"/> 40. A	<input type="checkbox"/> 16. D	<input type="checkbox"/> 29. 1.6 or $\frac{8}{5}$	<input type="checkbox"/> 16. A
<input type="checkbox"/> 17. B	<input type="checkbox"/> 41. D	<input type="checkbox"/> 17. B	<input type="checkbox"/> 30. 54	<input type="checkbox"/> 17. C
<input type="checkbox"/> 18. D	<input type="checkbox"/> 42. B	<input type="checkbox"/> 18. D	<input type="checkbox"/> 31. 44	<input type="checkbox"/> 18. E
<input type="checkbox"/> 19. A	<input type="checkbox"/> 43. E	<input type="checkbox"/> 19. B	<input type="checkbox"/> 32. $\frac{3}{4}$ or .75	<input type="checkbox"/> 19. B
<input type="checkbox"/> 20. D	<input type="checkbox"/> 44. D	<input type="checkbox"/> 20. B	<input type="checkbox"/> 33. 43 or 78	<input type="checkbox"/> 20. A
<input type="checkbox"/> 21. C	<input type="checkbox"/> 45. A		<input type="checkbox"/> 34. 14	<input type="checkbox"/> 21. B
<input type="checkbox"/> 22. B	<input type="checkbox"/> 46. C		<input type="checkbox"/> 35. 1.5 or $\frac{3}{2}$	<input type="checkbox"/> 22. D
<input type="checkbox"/> 23. D	<input type="checkbox"/> 47. D		<input type="checkbox"/> 36. 27	<input type="checkbox"/> 23. D
<input type="checkbox"/> 24. D	<input type="checkbox"/> 48. C		<input type="checkbox"/> 37. $\frac{8}{5}$ or 1.6	<input type="checkbox"/> 24. A
			<input type="checkbox"/> 38. 2	<input type="checkbox"/> 25. B
				<input type="checkbox"/> 26. C
				<input type="checkbox"/> 27. E
				<input type="checkbox"/> 28. D
				<input type="checkbox"/> 29. A
				<input type="checkbox"/> 30. B
				<input type="checkbox"/> 31. E
				<input type="checkbox"/> 32. C
				<input type="checkbox"/> 33. A
				<input type="checkbox"/> 34. E
				<input type="checkbox"/> 35. B
				<input type="checkbox"/> 36. A
				<input type="checkbox"/> 37. E
				<input type="checkbox"/> 38. C
				<input type="checkbox"/> 39. D
# Right (A):	# Right (A):	# Right (A):	# Right (A):	# Right (A):
_____	_____	_____	_____	_____
# Wrong (B):	# Wrong (B):	# Wrong (B):		# Wrong (B):
_____	_____	_____		_____
# (A) $-\frac{1}{4}$ (B):	# (A) $-\frac{1}{4}$ (B):	# (A) $-\frac{1}{4}$ (B):		# (A) $-\frac{1}{4}$ (B):
_____	_____	_____		_____



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**SCORE CONVERSION TABLE**


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**How to score your test**

Use the answer key on the previous page to determine your raw score on each section. Your raw score on any section is equal to the number of correct answers on that section minus 1/4 of the number of wrong answers, with the exception of the mathematical “grid-in” section, on which wrong answers are not deducted from your score. Remember to add the raw scores from Sections 1 and 3 to get your Critical Reading raw score, and to add the raw scores from Sections 2 and 4 to get your Math raw score. Write the three raw scores here:

Raw Critical Reading score (Section 1 + Section 3): \_\_\_\_\_

Raw Math score (Section 2 + Section 4): \_\_\_\_\_

Raw Writing score (Section 5): \_\_\_\_\_

Use the table below to convert these to scaled scores.

**Scaled scores:**      Critical Reading: \_\_\_\_\_      Math: \_\_\_\_\_      Writing: \_\_\_\_\_

Raw Score	Critical Reading Scaled Score	Math Scaled Score	Writing Scaled Score	Raw Score	Critical Reading Scaled Score	Math Scaled Score	Writing Scaled Score
48	80			20	49	52	54
47	80			19	48	51	52
46	78			18	47	50	51
45	76			17	46	48	50
44	74			16	45	47	49
43	72			15	44	46	48
42	71			14	43	45	46
41	69			13	42	44	45
40	68			12	41	43	44
39	67		80	11	40	42	43
38	66	80	80	10	39	41	41
37	64	77	78	9	38	40	40
36	63	74	77	8	37	39	39
35	62	72	76	7	36	38	37
34	62	70	74	6	34	36	36
33	61	68	73	5	33	35	35
32	60	66	71	4	32	34	33
31	59	65	69	3	30	32	32
30	58	64	68	2	29	30	31
29	57	62	66	1	27	29	30
28	56	61	65	0	25	26	29
27	55	60	63	-1	22	23	28
26	54	59	62	-2	20	20	27
25	54	58	60	-3	20	20	25
24	54	57	59	-4	20	20	24
23	52	55	57	-5	20	20	22
22	51	54	56	-6	20	20	21
21	50	53	55	-7 or less	20	20	20

# Detailed Answer Key

## Section I

1. **A** If she was *aggressive* for *what seemed like days*, she must have been quite *tenacious*. *unrelenting* = stubbornly persistent; *reflective* = pensive, thoughtful; *stagnant* = showing no movement or progress for a long period of time.

2. **C** If the helmsman *steered the ship away from the rocks*, then clearly the disaster was *avoided*. If he had to be *quick-thinking*, the rocks must have emerged *suddenly*. *forestalled* = put off until a later time; *averted* = prevented; *dispelled* = halted the spread of a wrong idea; *passively* = without effort or action; *serenely* = calmly.

3. **E** If investors *expected [the stock's] value to remain [steady] for many months*, they would be surprised by a *rapid* decline. *volatile* = explosive, prone to rapid change; *improvised* = performed quickly and without planning; *uniform* = having a consistent, monotonous quality; *cumbersome* = burdensome; *liquid* = quickly convertible to cash; *precipitous* = steep and rapid.

4. **B** If the new manager does not make *sudden decisions without thinking*, she must be more *thoughtful*. *capricious* = inclined to act on a whim; *pensive* = thoughtful; *inexorable* = unstoppable

5. **E** Those who study human cultures are *anthropologists*. *herpetologists* = scientists who study reptiles; *oncologists* = physicians specializing in cancer; *ornithologists* = scientists who study birds; *agronomists* = scientists who study farming.

6. **B** If *those who were familiar with Alicia's demeanor* were *surprised* by something she did, then she must have done something out of character. Look for the word pair that describes opposite kinds of behaviors. *intrepid* = fearless; *stolid* = unemotional; *meticulous* = paying close attention to details; *flippant* = inappropriately jocular, prone to making jokes at the wrong times.

7. **A** If *truthfulness is... an impediment to success* in a certain field, then to be successful in that field one must learn to *avoid the truth*. *prevarication* = willful avoidance of the truth; *timidity* = shyness; *certitude* = certainty; *perseverance* = ability to remain committed to a task.

8. **A** Most people would consider *thousands of hours of volunteer work* to be *selfless* rather than *selfish*, but Gina obviously thinks differently. She does not consider herself a *paragon* (prime example) of *generosity*. *altruistic* = selfless; *magnanimity* = generosity; *egotistical* = self-centered; *placidity* = calmness; *diversity* = variation within a population.

9. **E** The passage states that one example of knowledge that can be *gained directly* is that something *looks orange and tastes sweet* (lines 7–8). Such knowledge can only be gained through the physical senses.

10. **B** The statement *believe nothing* (line 25) and what follows indicates that the author is advocating a skeptical attitude toward argumentation.

11. **A** Passage 2 states that *many argument maneuvers are not made consciously* (lines 29–30), thereby suggesting that those making arguments aren't always fully aware of their own reasoning.

12. **C** The author of Passage 1 states that *the vast bulk of human knowledge is based on reasoning* (lines 14–16), and that reasoning from direct knowledge is the *foundation on which all other beliefs are based* (lines 18–19); in other words, belief is the result of reasoning. The author of Passage 2, however, says *believe nothing* (line 25), and, although this is clearly a hyperbolic statement, the author intends us to regard our beliefs skeptically.

13. **D** The first paragraph states that *individuals have the right...to save their own lives...and countries have the right...to prevent their own destruction* (lines 4–8).

14. **C** By saying that *the slaying of an evildoer is lawful*, Aquinas clearly supports the death penalty.

15. **C** The passage states that we proclaim our special reverence for life by *reserving the ultimate penalty of death for those who wantonly kill* (lines 18–19).

16. **E** The argument being made here is that the increase in homicides between 1950 and 1980 was due to the *abandonment of the death penalty*; yet no alternative explanations for such a rise are considered. A refutation, then, would cite other possible

reasons for this rise, such as a rise in population and the availability of weapons.

17. **B** Mr. van den Haag says that *life becomes cheaper as we become kinder to those who wantonly take it* (lines 71–72), thereby suggesting that life is honored as we become less kind to killers. Therefore, his attitude toward killers is harsh and uncompromising.

18. **D** These *reams* are the many *studies on the issue [of whether executions deter potential murders]* (lines 79–80). The author then goes on to say that these studies, save one that was *soundly refuted* (lines 82–83), show that no correlation exists.

19. **A** The *abolitionist states* (line 92) are contrasted directly with those that have capital executions; therefore abolitionist states are those that have abolished the death penalty.

20. **D** The author of Passage 2 states that *the death penalty is absolute and irrevocable*. This means that it cannot be taken back if it is rendered in error, as the author fears it may be.

21. **C** The author discusses the *moral foundation of a just society* (lines 73–74) in the first paragraph and the *just role of the state* (line 113) in the final paragraph.

22. **B** Passage 1, in lines 29–41, uses Ehrlich’s research to support the thesis that executions are effective. Passage 2, however, states that this research was *soundly refuted* (lines 82–83).

23. **D** The two passages take clearly opposing views on the necessity of the death penalty to a just society. Passage 1 regards the death penalty as *clearly proclaiming our special reverence for life* (lines 20–21), while Passage 2 regards it as *murderous vengeance* (line 120) that must not be legitimized.

24. **D** The author of Passage 2 clearly would *attack this notion [of employing execution as sheer retribution]* and in fact does so by criticizing it as *murderous vengeance* (line 120).

## Section 2

1. **C** This one is pretty straightforward. Simply double each number given in the choices. This gives 10, 12, 14, 16, and 18. The right answer will be a number that is two more than a multiple of 12, so subtract 2 from each one, getting 8, 10, 12, 14, and

16, and choose the multiple of 12. This gives an answer of (C).

(Chapter 8 Lesson 7: Divisibility)

2. **C** If the circle has an area of  $16\pi$  square inches, just use the area formula for a circle (remember, it’s in the reference information on every test) to find the radius:

$$\begin{array}{l} 16\pi = \pi r^2 \\ \text{Divide by } \pi: \quad 16 = r^2 \\ \text{Take the square root:} \quad 4 = r \end{array}$$

Then use the circumference formula to find the circumference:  $c = 2\pi r = 2\pi(4) = 8\pi$ .

(Chapter 11 Lesson 8: Circles)

3. **A** Write the equation:  $4.5 \text{ zots} = 1 \text{ zat}$

$$\begin{array}{l} \text{Divide by } 4.5: \quad 1 \text{ zot} = 2/9 \text{ zat} \\ \text{Multiply by } 36: \quad 36 \text{ zots} = 72/9 \text{ zats} = 8 \text{ zats} \end{array}$$

(Chapter 9 Lesson 1: Solving Equations)

4. **B** Think of the sequence of 20 terms as being 10 sets of 2 terms, (1, 2). Since each set is a sum of  $1 + 2 = 3$ , the sum of the 20 terms is  $3(10) = 30$ .

(Chapter 7 Reasoning Skill 3: Finding Patterns)

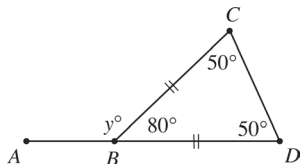
5. **E** This one is best done algebraically, although you can work backward from the answer choices, as well. If you do it algebraically, start by saying that Tom weighs  $t$  pounds and Carl weighs  $c$  pounds. If Tom weighs 20 pounds less than twice Carl’s weight, then  $t = 2c - 20$ . If together they weigh 340 pounds, then  $t + c = 340$ . Since you are looking for Tom’s weight, eliminate  $c$  from the system through substitution:

$$\begin{array}{l} t + c = 340 \\ \text{Subtract } t: \quad c = 340 - t \\ \text{Substitute } 340 - t \text{ for } c \text{ in the} \\ \text{first equation } (t = 2c - 20): \quad t = 2(340 - t) - 20 \\ \text{Distribute:} \quad t = 680 - 2t - 20 \\ \text{Simplify:} \quad t = 660 - 2t \\ \text{Add } 2t: \quad 3t = 660 \\ \text{Divide by } 3: \quad t = 220 \end{array}$$

Don’t forget to check your answer. If they weigh 340 pounds altogether, then Carl must weigh  $340 - 220 = 120$  pounds. Check that this satisfies the first condition, namely, that Tom weighs 20 pounds less than twice Carl’s weight:  $220 = 2(120) - 20$ . Yes!

(Chapter 9 Lesson 7: Word Problems)

6. **A** As always, be sure to mark up the diagram with the information you are given or can figure out.



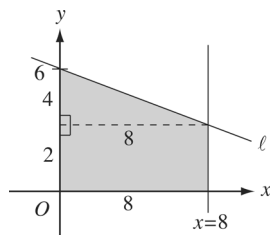
Since  $BC = BD$ , the two angles opposite those sides must be equal also, so  $\angle BCD = 50^\circ$ . Since the sum of the angles in a triangle is always  $180^\circ$ ,  $\angle CBD = 180 - 50 - 50 = 80^\circ$ . Since  $\angle ABC$  is supplementary to  $\angle CBD$  because they form a straight angle, then  $y = 180 - 80 = 100$ .

(Chapter 11 Lesson 1: Lines and Angles)

7. **E** First evaluate  $*10$ . Since 10 is not a multiple of 3,  $*10 = 3(10) = 30$ . Now check to see which choice is also equivalent to 30. [Be careful not to jump right to choice (D) just because it contains a 30!] Following the instructions gives (A)  $*3 = 3/3 = 1$ , (B)  $*9 = 9/3 = 3$ , (C)  $*20 = 3(20) = 60$ , (D)  $*30 = 30/3 = 10$ , and (E)  $*90 = 90/3 = 30$ .

(Chapter 10 Lesson 1: New Symbol or Term Problems)

8. **B** First notice that the shaded region consists of a right triangle and a rectangle, the areas of which you can find easily once you know the base and height of each. As always, mark up the diagram.



Remember that the slope of the line is simply the “rise” between two points divided by the “run” between those same two points. Consider line  $\ell$  between the  $y$ -axis and the line  $x = 8$ . Clearly, the “run” here is 8. Since the slope of line  $\ell$  is  $-1/2$ ,

$$\text{rise}/8 = -1/2$$

$$\text{Multiply by 8: rise} = -4$$

So line  $\ell$  descends 4 units between the  $y$ -axis and the line  $x = 8$ , as shown in the diagram. Since line  $\ell$  intercepts the  $y$ -axis at 6, the height of the rectangle

must be  $6 - 4 = 2$ . The area of the rectangle, then, is  $(8)(2) = 16$ , and the area of the right triangle is  $(\frac{1}{2})(8)(4) = 16$ . The area of the shaded region, then, is  $16 + 16 = 32$ .

(Chapter 11 Lesson 4: Coordinate Geometry)

(Chapter 11 Lesson 5: Areas and Perimeters)

9. **D** You can use simple algebra or plug in simple values for  $x$  and  $d$ , whichever is easier. If each box contains  $x$  pencils, then 10 boxes contain  $10x$  pencils, which you are told cost  $d$  dollars. Simply multiplying by 5 shows that 50 pencils cost  $5d$  dollars.

Alternatively, you could just pick simple values like  $x = 20$  and  $d = 6$ . This would mean that 10 boxes of 20 pencils cost 6 dollars, or  $10 \times 20 = 200$  pencils cost 6 dollars. The question now becomes: how much do  $50x = (50)(20) = 1,000$  pencils cost? A proportion might be handy:

$$\begin{array}{r} \frac{200 \text{ pencils}}{6 \text{ dollars}} = \frac{1,000 \text{ pencils}}{y \text{ dollars}} \\ \text{Cross-multiply:} \quad 200y = 6,000 \\ \text{Divide by 200:} \quad y = 30 \end{array}$$

Now, if you plug  $x = 20$  and  $d = 6$  into the answer choices, you will see that only choice (D) gives the value of 30.

(Chapter 9 Lesson 7: Word Problems)

(Chapter 8 Lesson 4: Ratios and Proportions)

10. **B** First notice that this is a rate problem and remember the rate formula:  $\text{distance} = \text{rate} \times \text{time}$ . Compare the real race with the “planned” race. Beth had planned to run at 6 mph and finish in  $t$  hours. Therefore, using the rate formula, you can express the distance of the race as  $6t$  miles. But she actually ran the race at 7 mph and finished in  $t - 1/6$  hours. (Remember that 10 minutes is  $10/60 = 1/6$  of an hour.) So the race distance can also be expressed as  $7(t - 1/6)$ . Since the distance is the same in either case,

$$\begin{array}{r} 7(t - 1/6) = 6t \\ \text{Distribute:} \quad 7t - 7/6 = 6t \\ \text{Subtract } 6t: \quad t - 7/6 = 0 \\ \text{Add } 7/6: \quad t = 7/6 \end{array}$$

Therefore, the distance is  $6t = 6(7/6) = 7$  miles  
(Chapter 10 Lesson 4: Rate Problems)

11. **C** Since the map is drawn to scale, you can set up a proportion:

$$\frac{1.5 \text{ cm}}{2 \text{ miles}} = \frac{x \text{ cm}}{35 \text{ miles}}$$

Cross-multiply:  $52.5 = 2x$

Divide by 2:  $26.25 = x$

(Chapter 8 Lesson 4: Ratios and Proportions)

(Chapter 11 Lesson 6: Similar Figures)

12. **C** Since comparing decimals is easier than comparing fractions, it's probably best to convert all the fractions to decimals with your calculator. Since the project requires  $5/8 = .625$  meter of pipe, the correct answer must be no less than .625. To minimize the waste, we must find the smallest length that is greater than .625. "Decimalizing" the choices gives (A) .5625, (B) .6, (C) .75, (D) .8, and (E) .83. The smallest length greater than .625 is (C) .75.

(Chapter 10 Lesson 3: Numerical Reasoning Problems)

13. **E** Just focus on one equation at a time to find the values of the unknowns:

$$\begin{array}{l} 4c = 24 \\ \text{Divide by 4: } c = 6 \end{array}$$

$$\begin{array}{l} 2b = 24 \\ \text{Divide by 2: } b = 12 \end{array}$$

$$\begin{array}{l} \left(\frac{1}{2}\right)a = 24 \\ \text{Multiply by 2: } a = 48 \end{array}$$

Therefore  $a + b + c = 48 + 12 + 6 = 66$ .

(Chapter 9 Lesson 1: Solving Equations)

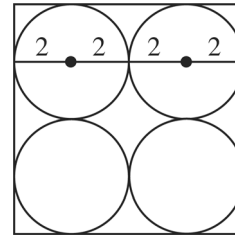
14. **A** Think about the statement  $x^2 > 6$ . Notice that both positive values, like  $x = 5$ , and negative values, like  $x = -5$ , satisfy this inequality. (Try them and see!) The square root of 6 is  $\pm 2.449\dots$ , so if  $x^2$  is greater than 6,  $x$  must be either greater than 2.449... or less than  $-2.449\dots$ . Therefore  $x$  could equal 2.5, which shows that statement I is not necessarily true (because  $|2.5|$  is not greater than 3). Also,  $x$  could be  $-1,000,000$ , because anything less than  $-2.449\dots$  will work, so statement III is not necessarily true (because  $-1,000,000 + 1,000$  is not greater than 0). Now, if you simply eliminate all of the answer choices containing statement I or statement III, you are left only with (A). So statement II must be true. If you want to be sure, a little algebra will show that statement II is equivalent to the

given statement and therefore must be true.

$$\begin{array}{l} (x - 2)(x + 2) > 2 \\ \text{FOIL: } x^2 + 2x - 2x - 4 > 2 \\ \text{Simplify: } x^2 - 4 > 2 \\ \text{Add 4: } x^2 > 6 \end{array}$$

(Chapter 9 Lesson 6: Inequalities, Absolute Values, and Plugging In)

15. **E** As always, mark up the diagram with the information as you get it.



You are given the circumference of the circles, and asked to find the area of the square. So, you must find the relationship between the circles and the square. You can use the circumference formula to find the radius of each circle:

$$\begin{array}{l} 4\pi = 2\pi r \\ \text{Divide by } 2\pi: \quad 2 = r \end{array}$$

Now notice that one side of the square has the length of 4 radii, as shown in the diagram. So the length of one side of the square is  $(4)(2) = 8$ . The area of the square is found by squaring the length of one side:  $s^2 = 8^2 = 64$ .

(Chapter 11 Lesson 8: Circles)

(Chapter 11 Lesson 5: Areas and Perimeters)

16. **D** Since your task is to *maximize* the number of evens in this set, it is best to first ask whether they can *all* be even. Notice that this gives (even)(even)(even) + (even)(even)(even) + (even). Remember that the product of an even number and any other integer is always even, and that the sum of two even numbers is always even. Therefore this expression reduces to (even) + (even) + (even), which necessarily yields an even number. This can't be, though, because we are told that the result must be odd. To get an odd result, all we would have to do is change the last number,  $g$ , to an odd number. (Check it and see!) Therefore, the maximum number of evens in this set is five.

(Chapter 10 Lesson 3: Numerical Reasoning Problems)

17. **B** If the average of six numbers is 32, then their sum is  $(6)(32) = 192$ . Since this sum is fixed, then to maximize one of the numbers, you must *minimize* the sum of the other 5. You are told that the numbers are *different integers*, none of which is less than 10, implying that the least the other 5 can be is 10, 11, 12, 13, and 14. Therefore, if  $x$  is the greatest possible value of any of the numbers,

$$\begin{array}{r} 10 + 11 + 12 + 13 + 14 + x = 192 \\ \text{Simplify:} \qquad \qquad \qquad 60 + x = 192 \\ \text{Subtract 60:} \qquad \qquad \qquad x = 132 \end{array}$$

(Chapter 10 Lesson 2: Mean, Median and Mode Problems)

18. **D** If you are comfortable with your rules of exponents, you can probably solve the equation for  $n$  algebraically. If not, you can just “test” the choices by plugging them in for  $n$  until you find one that makes the equation true. Here’s one of many ways to solve algebraically:

$$\begin{array}{r} \text{Simplify:} \qquad \qquad \qquad (1/4)^n = 2^{-3} \\ \text{Cross-multiply:} \qquad \qquad 4^n = 8 \\ \text{Write with common base:} \quad (2^2)^n = 2^3 \\ \text{Simplify:} \qquad \qquad \qquad 2^{2n} = 2^3 \\ \text{Equate the exponents:} \qquad 2n = 3 \\ \text{Divide by 2:} \qquad \qquad \qquad n = 3/2 \end{array}$$

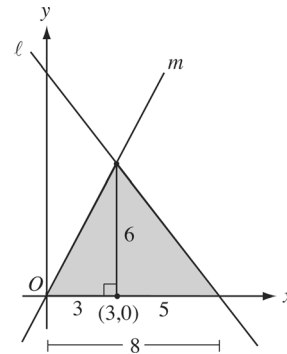
(Chapter 9 Lesson 3: Working with Exponents)

19. **B** Looking at the choices makes it pretty clear that writing out all of the possible numbers is going to take more than a little while. To simplify the counting, use the fundamental counting principal. First, notice that all of the integers between 100 and 1,000 have three digits, so “choosing” one of these integers involves specifying three digits. There are only 9 choices for the first digit, since it can’t be 0. Once that first digit is chosen, there are 9 digits remaining for the second digit. (Remember that you can use 0 as the second digit, but you can’t use the first digit again.) Then, since you can’t use either of the first two digits again, there are only 8 digits remaining for the last digit. This give a total of  $9 \times 9 \times 8 = 648$  such integers.

(Chapter 10 Lesson 5: Counting Problems)

20. **B** Be sure to mark up the diagram with any given information and any information you can

deduce:



If line  $m$  has a slope of 2, then when the “run” is 3 (as it is from the origin to the point where the lines intersect), then “rise” must be  $(2)(3) = 6$ . Notice that this is also the height of the triangle. Since the area of the triangle is 24, you can use the triangle area formula to find the length of the base:

$$\begin{array}{r} 24 = (1/2)b(6) \\ \text{Simplify:} \qquad 24 = 3b \\ \text{Divide by 3:} \qquad 8 = b \end{array}$$

Since the base is 8 units, the other part of the base is  $8 - 3 = 5$ , as shown in the diagram. This gives a “rise” and “run” for line  $l$ , so the slope is  $-6/5$ .

(Chapter 11 Lesson 1: Lines and Angles)

(Chapter 11 Lesson 4: Coordinate Geometry)

### Section 3

25. **D** Editing a manuscript from 400 pages down to 250 pages is quite a *reduction*. *enhanced* = improved; *abridged* = shortened a text

26. **A** The sentence contains a parallel structure that indicates that the first missing word should contrast *bland* and the second missing word should contrast *artistically daring*. *enchanting* = charming and delightful; *conventional* = ordinary; *innovative* = new and inventive; *tedious* = difficult to tolerate; *pedestrian* = ordinary; *trite* = overused

27. **C** An *inveterate gambler* is one who gambles habitually. To disprove the assumption that *payoffs must be consistent* to support an addiction, one must show that the payoffs might be *given at irregular intervals*. *steadfast* = fixed or unchanging; *sporadic* = occurring at irregular intervals; *placid* = peaceful

28. **E** If one is *surprised* by the finding that walking prolongs life, that person must have *denied a relationship between exercise and long life*. *mediation* = the

act of resolving a dispute between two or more other parties; *prosperity* = flourishing success; *correlation* = relationship; *longevity* = length of life

29. **D** The phrase *even to* suggests an element of surprise. Those who study something for a long time are expected to know a lot about it. It would be surprising, therefore, if they still found that subject *difficult to understand*. It would logically be *even more difficult to understand* for someone who did not study the subject. *forthcoming* = frank and honest; *daunting* = intimidating; *fallow* = unproductive; *cryptic* = hard to decipher; *inscrutable* = incapable of being comprehended; *fatuous* = foolishly stupid; *singular* = unique

30. **E** The passage states that *the current media environment* allows individuals to *offer messages inexpensively over the internet* so that they are no longer *constrained by cost*. In other words, the new media are more accessible to users.

31. **C** The passage does not take any controversial or emotional stance on the topic, mentioning only objective facts.

32. **B** This quotation states that *mathematics [needs] persons who . . . have a sense of the beautiful*. Therefore, an aesthetic sense is helpful to mathematical thought.

33. **E** John Conway is mentioned because he *cannot imagine he is doing anything but discovering* rather than inventing mathematical results. His quotation reinforces that point, saying that mathematical truths are as closed to interpretation as the truth that *pigs don't fly*.

34. **A** This passage, as a whole, praises newspapers for *their achievements in crusading*. Therefore, its overall tone is *laudatory*.

35. **E** The author states that it is *singular* (surprising and unique) *that newspapers . . . have made so little to-do about their achievements in crusading* (lines 1–3). In other words, the newspapers are not acknowledging one of their virtues.

36. **D** This *wealth of material* refers to the information about how newspapers have acted as *champions of reform . . . [and] protagonists of their communities* (lines 4–6). This means that they have acted to change their communities.

37. **C** In saying that the institution of newspapers *has discharged it [that is, crusading] for the most*

*part admirably*, the passage is saying that it has *performed or accomplished* this task well.

38. **B** The skeptics *deny that campaigns are ever undertaken for other than sordid motives*. In other words, they believe that newspapers only “crusade” for selfish purposes.

39. **D** In saying that *zeal . . . fires a crusading editor*, the author means that this zeal *inspires* or stimulates the editor.

40. **A** The final paragraph indicates that some campaigns result in a *loss of circulation and advertising* (line 53), which are the only sources of revenue for a newspaper.

41. **D** The overall purpose of the passage is to examine the art form of *cut and pasted paper* (lines 10–11) which was pioneered by Henri Matisse. Notice that every paragraph refers to *cut and pasted paper*, *collage*, or *decoupage*, which all refer to the same art form.

42. **B** The quotation indicates that Matisse was *afraid the young . . . will . . . [dispense] with certain efforts* (lines 6–9) because Matisse has tried to *never let . . . anyone know the labors* of his art. In other words, he is concerned that younger artists will think that his art is easier to make than it really is.

43. **E** This comment is made in the context of a discussion of how *lively and energetic* Matisse’s art is, so the comment about Matisse’s advanced age serves as a stark contrast.

44. **D** The *brilliant hues* of the paper are its *vibrant colors*. Therefore, *shining* is the best choice.

45. **A** Matisse is quoted to say that he has achieved a form that is *reduced to the essential* (lines 62–63) and is *no longer in the complexity of its space* (lines 63–64), in other words, his decoupage is pictorially simple.

46. **C** This *intimacy* describes the relationship between Matisse and the medium of decoupage, in which he is able to *select, place, and reposition the cut paper shapes* (lines 73–74).

47. **D** In lines 19–20, the passage states that Matisse’s most famous work of decoupage shows *no three-dimensional modeling of the forms or shadows*. Elsewhere in the passage, however, the author describes the medium’s relative ease of use (*less strenuous*, line 34), manipulability (*select*,

place, and reposition, lines 73–74), pictorial strength (lines 52–53), and vitality (*lively and energetic*, line 14).

48. **C** The final paragraph states that Matisse *truly enjoyed*, indeed *relished*, his challenges, suggesting that he was enthusiastic. It also states that he had the *habit of hard work* (line 75), indicating that he was diligent.

#### Section 4

21. **D** You might simply notice that  $18/15$  reduces to  $6/5$ , making the answer obvious. If you want to use the “brute force” method, however, cross-multiply:

$$\begin{array}{r} (18)(5) = 15x \\ \text{Simplify:} \quad 90 = 15x \\ \text{Divide by 15:} \quad 6 = x \end{array}$$

(Chapter 8 Lesson 4: Ratios and Proportions)

22. **B** Remember the formula for the area of a triangle, and simply plug in what you know:

$$\begin{array}{r} A = \frac{1}{2}bh \\ \text{Substitute:} \quad 24 = \frac{1}{2}(6)h \\ \text{Simplify:} \quad 24 = 3h \\ \text{Divide by 3:} \quad 8 = h \end{array}$$

(Chapter 11 Lesson 5: Areas and Perimeters)

23. **D** Read the chart carefully and notice that each book represents 20,000 copies. Since the sales in 2003 are 2.5 “books” more than in 2002, the difference in copies is  $2.5 \times 20,000 = 50,000$  copies.

(Chapter 7 Reasoning Skills 2: Analyzing)

24. **A** What number is 24 less than 3 times itself?

$$\begin{array}{r} \text{Translate:} \quad x = 3x - 24 \\ \text{Subtract } 3x: \quad -2x = -24 \\ \text{Divide by } -2: \quad x = 12 \end{array}$$

(Chapter 9 Lesson 1: Solving Equations)

25. **E** You need to know the parallel lines theorem for this one. Because the two lines are parallel, angles 1 and 9 must be equal because they are “corresponding” angles. Angles 5 and 7 must be equal because they are “vertical” angles. Therefore, statements I and III are true. The only answer choice containing both I and III is (E), so that must be the correct

answer. As to statement II, angles 2 and 8 are not necessarily equal, because they do not share any common lines.

(Chapter 11 Lesson 1: Lines and Angles)

26. **E** The average of 0,  $a$ , and  $b$  is  $\frac{0+a+b}{3}$ .

$$\begin{array}{r} \frac{0+a+b}{3} = 2a \\ \text{Multiply by 3:} \quad a+b = 6a \\ \text{Subtract } a: \quad b = 5a \end{array}$$

(Chapter 10 Lesson 2: Mean/Median/Mode Problems)

27. **C** The prime factorization of 21 is  $3 \times 7$ , and the prime factorization of 39 is  $3 \times 13$ . Since  $b$  represents a common factor of 21 and 39 that is greater than 1, it must be 3. This means that  $a$  is 7 and  $c$  is 13. Therefore  $b < a < c$ .

(Chapter 10 Lesson 3: Numerical Reasoning)

28. **C** You can solve this one algebraically or just test the choices. Recall that when you test the choices, it’s usually best to start with (C) because it’s the “middle” value. Begin by guessing that Rudy earns \$8. Since Rudy earned \$2.50 less than Charlene did, Charlene must have earned  $\$8.00 + \$2.50 = \$10.50$ . If Charlene earned 3 times as much as David did, then David must have earned  $\$10.50 \div 3 = \$3.50$ . Check this by seeing if the total is \$22.00, as the problem says:  $\$8.00 + \$10.50 + \$3.50 = \$22.00$ . Bingo!

Here we got lucky because the first choice we checked happened to be correct. The drawback to testing the choices is that you may need to do it more than once. To avoid this, you can set up an equation and solve directly. If Rudy earned  $r$  dollars, then Charlene must have earned  $r + 2.50$  dollars, and David must have earned  $(r + 2.50)/3$  dollars. Set up the equation:

$$r + (r + 2.50) + \frac{r + 2.50}{3} = 22$$

$$\begin{array}{r} \text{Multiply by 3:} \quad 3r + 3r + 7.50 + r + 2.50 = 66 \\ \text{Simplify:} \quad 7r + 10 = 66 \\ \text{Subtract 10:} \quad 7r = 56 \\ \text{Divide by 7:} \quad r = 8 \end{array}$$

(Chapter 7 Lesson 6: Finding Alternatives)  
(Chapter 9 Lesson 7: Word Problems)



29. **1.6 or 8/5** Recall that two-part ratios can be treated as fractions:  $2.5/16 = .25/x$

$$\begin{array}{l} \text{Cross-multiply; } 2.5x = 4 \\ \text{Divide by 2.5: } x = 1.6 \text{ or } 8/5 \end{array}$$

(Chapter 8 Lesson 4: Ratios and Proportions)

30. **54** Simply substitute the given numbers using the definition of the new symbol. Since  $x \Delta y = (xy) - (x + y)$ , then  $12 \Delta 6 = (12 \times 6) - (12 + 6) = 72 - 18 = 54$  (Chapter 10 Lesson 1: New Symbol or Term Problems)

31. **44** Because the sum of the five angles is a straight angle, which measures  $180^\circ$ ,  $x + x + y + y + y = 180$

$$\begin{array}{l} \text{Simplify: } 2x + 3y = 180 \\ \text{Substitute 24 for } x: 2(24) + 3y = 180 \\ \text{Simplify: } 48 + 3y = 180 \\ \text{Subtract 48: } 3y = 132 \\ \text{Divide by 3: } y = 44 \end{array}$$

(Chapter 9 Lesson 1: Solving Equations)  
(Chapter 11 Lesson 1: Lines and Angles)

32. **3/4 or 75** To simplify the problem, first notice that half of the cards in each deck are odd and half are even. Therefore, you only need to consider four possible outcomes from multiplying a number from one deck and a number from the other: (even)(even), (even)(odd), (odd)(even), and (odd)(odd). Each of these outcomes is equally likely, and the first three produce an even product. Therefore, the probability that the product is even is  $3/4$ .

(Chapter 10 Lesson 6: Probability Problems)

33. **43 or 78** Since you only need to look at the integers between 40 and 80, listing them isn't so difficult. Since the number you want gives a remainder of 1 when it is divided by 7, start by listing the integers between 40 and 80 that are 1 more than a multiple of 7:  $42 + 1 = 43$ ,  $49 + 1 = 50$ ,  $56 + 1 = 57$ ,  $63 + 1 = 64$ ,  $70 + 1 = 71$ , and  $77 + 1 = 78$ . The only numbers in this set that give a remainder of 3 when divided by 5 are 43 and 78.

(Chapter 10 Lesson 3: Numerical Reasoning Problems)

(Chapter 8 Lesson 7: Divisibility)

34. **14** This question tests your ability to use the distributive law to multiply polynomials:

$$\begin{aligned} & (2x^2 + 5x + 3)(3x + 1) \\ & (3x)(2x^2 + 5x + 3) + (1)(2x^2 + 5x + 3) \\ & (3x)(2x^2) + (3x)(5x) + (3x)(3) + 2x^2 + 5x + 3 \\ & 6x^3 + 15x^2 + 9x + 2x^2 + 5x + 3 \\ & \text{Combine like terms: } 6x^3 + 17x^2 + 14x + 3 \end{aligned}$$

Since  $c$  represents the coefficient of the "x" term,  $c = 14$ .

(Chapter 8 Lesson 2: Laws of Arithmetic)

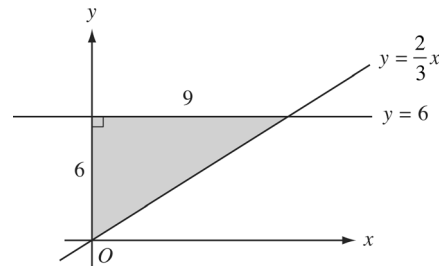
35. **1.5 or 3/2** It may help to write out blank spaces to represent the unknown terms in the sequence. Since the fourth term is 12, the sequence looks like -----, -----, -----, 12. Now you need to "work backwards" to find the first term. Since each term is 4 less than 4 times the previous term, then each term must be  $1/4$  of the number that is 4 greater than the next term. (If this makes your brain hurt a bit, try it out and check.) In other words, the third term must be  $(1/4)(12 + 4) = 4$ . (Now check: notice that if you follow the rule to get the next term, you get 12!) Continuing gives you  $(1/4)(4 + 4) = 2$  for the second term, and  $(1/4)(2 + 4) = 1.5$  for the first term. Check one more time that the sequence follows the rule forward: 1.5, 2, 4, 12.

(Chapter 7 Reasoning Skill 3: Finding Patterns)

36. **27** One way to analyze this problem is to find the point where the two lines cross. This is the same as solving the system  $y = 6$  and  $y = (2/3)x$ .

$$\begin{array}{l} \text{Set the } y\text{s equal: } 6 = (2/3)x \\ \text{Multiply by } 3/2: \quad = x \end{array}$$

So the point of intersection is (9, 6), which means that the triangle has a "base" of 6 and a "height" of 9. (You might turn the diagram  $90^\circ$  to get a clearer picture.)



Therefore, it has an area of  $(1/2)(9)(6) = 27$

(Chapter 9 Lesson 2: Systems)

(Chapter 11 Lesson 4: Coordinate Geometry)

(Chapter 11 Lesson 5: Areas and Perimeters)

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37. **8/5 or 1.6**  $\frac{2x+10}{5} + \frac{3x-2}{5}$

Add fractions:  $\frac{(2x+10)+(3x-2)}{5}$

Simplify:  $\frac{5x+8}{5}$

Distribute:  $\frac{5x}{5} + \frac{8}{5}$

Simplify:  $x + \frac{8}{5}$

Therefore, this expression is  $8/5$  greater than  $x$ .  
(Chapter 8 Lesson 3: Fractions)

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38. **2**

$$9\left(\frac{1}{3}\right) = 3^m$$

Simplify:  $9\left(\frac{1}{3^n}\right) = 3^m$

Multiply by  $3^n$ :  $9 = 3^m \times 3^n$

Simplify:  $9 = 3^{m+n}$

Write with common base:  $3^2 = 3^{m+n}$

Equate exponents:  $2 = m + n$

(Chapter 9 Lesson 3: Working with Exponents)  
(Chapter 9 Lesson 1: Solving Equations)

### Section 5

1. **D** The modifying phrase at the beginning of the sentence must be followed by the noun it modifies, *Francis*. Choice (C) uses *then* redundantly, and choice (E) is illogical.

(Chapter 13 Lesson 8: Other Misplaced Modifiers)

2. **B** This is a run-on sentence because it joins two independent clauses with only a comma. The second clause is also unnecessarily vague. It uses the passive voice to obscure the subject, which should be the same as that in the previous clause—*paleontologists*. Choice (B) joins the clauses appropriately with a semicolon, and clarifies the subject of the second clause.

(Chapter 13 Lesson 15: Coordinating Ideas)

3. **C** The phrase *as if* should be followed by an independent clause that describes a hypothetical condition. The original sentence, however, follows it with incomplete thought. Choice (C) provides the most logical phrasing. The past perfect subjunctive *had swum* must be used because the statement is hypothetical (or subjunctive), and because the action would have been completed before James

got out of the pool, and so is a “perfect” action.  
(Chapter 13 Lesson 15: Coordinating Ideas)  
(Chapter 13 Lesson 9: Tricky Tenses)  
(Chapter 13 Lesson 14: The Subjunctive Mood)

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4. **D** The original sentence lacks parallel form and therefore reads awkwardly. The two clauses have the same subject and so should both be in the active voice. Choice (D) accomplishes this most concisely.  
(Chapter 13 Lesson 3: Parallelism)

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5. **E** The subject and verb of the sentence are *a hurdle is*. What follows should be a noun (predicate nominative) that is equivalent to the *hurdle*. In the original phrasing, what follows is an independent clause rather than a noun phrase. Choices (B), (D), and (E) are all noun phrases, but (B) is illogical, and (D) uses the unidiomatic *expect being* instead of the correct *expect to be*.

(Chapter 13 Lesson 15: Coordinating Ideas)  
(Chapter 13 Lesson 3: Parallelism)

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6. **B** The original phrasing is redundant and contains two problems: a lack of parallelism and a misplaced modifier. The two clauses have the same subject, so they should both be in the active voice. Also, the phrase *such as Woody Allen* should be closer to the noun it modifies, *humorists*. Choice (B) corrects both problems most concisely and effectively.

(Chapter 13 Lesson 3: Parallelism)  
(Chapter 13 Lesson 12: Other Problems with Modifiers)

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7. **E** The original phrasing is awkward, wordy and unclear. The subject and verb *the fact is* do not convey the central idea of the sentence, and the modifying phrase at the end of the sentence is nonstandard. Choice (E) uses a much more effective and meaningful subject and verb: *Noam Chomsky discovered*.

(Chapter 13 Lesson 15: Coordinating Ideas)

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8. **A** The original phrasing is the most concise and logical.

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9. **B** The original sentence uses pronouns inconsistently. Since the first clause uses *your*, the second clause should, also. Choice (B) is better than (C) because its phrasing is parallel with that of the first clause.

(Chapter 13 Lesson 5: Pronoun Agreement)  
(Chapter 13 Lesson 3: Parallelism)

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10. **A** The original phrasing is best. The subject and verb of the sentence are *the reason was*.

Therefore, what follows should be a noun phrase that describes the *reason*. Choice (B) is not a noun phrase, and it uses the nonstandard construction *the reason was because*. The other choices are also not noun phrases.

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11. **C** The modifying phrase at the beginning of the sentence should be followed by the noun that it modifies, *the small company*. Choice (C) is the only one that repairs the dangling modifier.  
(Chapter 13 Lesson 8: Other Misplaced Modifiers)

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12. **D** The phrasing in the original sentence is not parallel. Since it contains a list, the phrasing of the items should be similar. Choice (D) puts all three items in the same form: *adjective noun*.  
(Chapter 13 Lesson 3: Parallelism)

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13. **E** In the original sentence, the phrasing of the two clauses is not parallel, and the pronoun *it* has no clear antecedent. Choice (E) might sound odd at first reading, because it uses *ellipsis*, that is, the omission of a phrase that is implied by the parallelism in the sentence. In other words, the sentence is equivalent to *Many visitors were impressed by the monument's sheer size; others [were impressed] by its solemn gravity*. The phrase in brackets can be omitted because it is implied by the parallel clause that came before.  
(Chapter 13 Lesson 5: Pronoun Agreement)  
(Chapter 13 Lesson 3: Parallelism)

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14. **B** The participial phrase beginning with *finding* should be followed by the noun it modifies, *the expedition leader*, since it was he who did the finding. Choice (D) appears to repair the dangling participle, but it does not create a complete sentence.  
(Chapter 13 Lesson 7: Dangling and Misplaced Participles)

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15. **C** The original sentence phrases the comparison awkwardly. It is not clear what is being compared. Furthermore, the subject and verb of the sentence are *educators believe*, so what follows should be a noun phrase that describes what they believe. Choices (C) and (E) are both noun phrases, but only choice (C) shows a clear and logical comparison.  
(Chapter 13 Lesson 4: Comparison Errors)

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16. **A** The original phrasing is correct.

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17. **C** The original phrasing is only a sentence fragment, because the main “clause” contains no verb. Choices (C) and (E) are the only ones that form

complete sentences, but choice (E) is illogical.  
(Chapter 13 Lesson 15: Coordinating Ideas)

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18. **E** The pronoun *its* has no clear antecedent in the sentence. Choices (D) and (E) clarify the noun by specifying it as *the claim*, but choice (D) uses the unidiomatic phrasing *of support to*.  
(Chapter 13 Lesson 5: Pronoun Agreement)  
(Chapter 13 Lesson 10: Idiom Errors)

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19. **B** The original comparison is illogical and not parallel. Choice (B) makes the comparison clearer and more logical through parallel phrasing—*on the advice of a friend* parallels *on my own analysis*.  
(Chapter 13 Lesson 4: Comparison Errors)  
(Chapter 13 Lesson 3: Parallelism)

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20. **A** This sentence is correct. It must use the subjunctive verbs *could not have completed* and *had not made* because it describes a hypothetical situation.  
(Chapter 13 Lesson 14: The Subjunctive Mood)

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21. **B** The subject of the verb is *treats*, so the verb should be conjugated for a plural subject: *were*. This is a bit tricky because the sentence is “inverted”; that is, the subject comes *after* the verb.  
(Chapter 13 Lesson 1: Subject-Verb Disagreement)  
(Chapter 13 Lesson 2: Trimming Sentences)

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22. **D** This is an illogical comparison. The comparison should be between the *money* collected this year and the *money* collected last year, so the correct phrasing in (D) is *we collected last year*.  
(Chapter 13 Lesson 4: Comparison Errors)

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23. **D** The idiomatic phrasing here should be *not only A but B as well*. Therefore (D) should be changed to *but*.  
(Chapter 13 Lesson 3: Parallelism)  
(Chapter 13 Lesson 10: Idiom Errors)

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24. **A** The word *before* indicates that the *seeing* would have been completed before the *being astonished*. To show the correct time sequence, choice (A) should use the perfect participle *never having seen*.  
(Chapter 13 Lesson 9: Tricky Tenses)

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25. **B** *Precede* means *come before*. This usage is illogical here. The sentence clearly implies that the actress could not *proceed* (continue).  
(Chapter 13 Lesson 11: Diction Errors)

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26. **C** The subject of the sentence is *Ricardo*. Since this is a singular subject, the verb conjugation should be *was*.

(Chapter 13 Lesson 1: Subject-Verb Disagreement)

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27. **E** The sentence is correct.

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28. **D** This phrase is not idiomatic. The correct idiom is *insights into*.

(Chapter 18 Lesson 10: Idiom Errors)

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29. **A** This modifies the verb *resembled*, so it should be the adverb *closely*.

(Chapter 13 Lesson 12: Other Problems with Modifiers)

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30. **B** This comparison is illogical. It should compare the *movies of Frank Capra* to the *movies of many modern directors*.

(Chapter 13 Lesson 4: Comparison Errors)

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31. **E** The sentence is correct.

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32. **C** The pronoun *they* requires a plural antecedent, so this phrase should read *hyenas employ*.

(Chapter 13 Lesson 5: Pronoun Agreement)

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33. **A** The participle *examining* dangles in the original sentence since its subject never appears. The best way to correct this problem is to rephrase it as *when one examines*.

(Chapter 13 Lesson 7: Dangling and Misplaced Participles)

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34. **E** The sentence is correct.

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35. **B** The word *unlike* indicates a comparison between *long ago* and some other time. This “other time” must be indicated for the comparison to be logical. Choice (B) corrects this problem by comparing *long ago* to *today*.

(Chapter 13 Lesson 4: Comparison Errors)

(Chapter 13 Lesson 8: Other Misplaced Modifiers)

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36. **A** The pronoun *it* does not have a proper antecedent. It seems to refer to *the things we buy* in sentence 3, but this is plural, not singular. Choices (A), (B), and (E) avoid this problem, but (B) shows an illogical contrast and (E) is awkward and vague.

(Chapter 13 Lesson 5: Pronoun Agreement)

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37. **E** The pronoun *this* has no clear antecedent, and the pronoun *they* is used to refer to two different antecedents, *workers* and *methods*. Choice (E) clarifies these references most effectively.

(Chapter 13 Lesson 5: Pronoun Agreement)

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38. **C** The clause *it means being inhumane* is extremely vague. Choice (C) clarifies the subject and verb and conveys the idea logically.

(Chapter 13 Lesson 15: Coordinating Ideas)

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39. **D** Choice (D) provides the most logical transition because it mentions the previous discussion about *the manufacture of consumer goods* and introduces a new, but related, discussion about *their disposal*.

(Chapter 13 Lesson 15: Coordinating Ideas)