

# **SAT I: Reasoning Test**

---

**Saturday, May 2002**

YOUR NAME (PRINT) \_\_\_\_\_  
 LAST FIRST MI  
 TEST CENTER \_\_\_\_\_  
 NUMBER NAME OF TEST CENTER ROOM NUMBER

# SAT® I: Reasoning Test — General Directions

## Timing

- You will have three hours to work on this test.
- There are five 30-minute sections and two 15-minute sections.
- You may work on only one section at a time.
- The supervisor will tell you when to begin and end each section.
- If you finish a section before time is called, check your work on that section. You may NOT turn to any other section.
- Work as rapidly as you can without losing accuracy. Don't waste time on questions that seem too difficult for you.

**IMPORTANT:** The codes below are unique to your test book. Copy them on your answer sheet in boxes 8 and 9 and fill in the corresponding ovals exactly as shown.

## Marking Answers

- Carefully mark only one answer for each question.
- Make sure each mark is dark and completely fills the oval.
- Do not make any stray marks on your answer sheet.
- If you erase, do so completely. Incomplete erasures may be scored as intended answers.
- Use only the answer spaces that correspond to the question numbers.
- For questions with only four answer choices, an answer marked in oval E will not be scored.
- Use the test book for scratchwork, but you will not receive credit for anything written there.
- You may not transfer answers to your answer sheet or fill in ovals after time has been called.
- You may not fold or remove pages or portions of a page from this book, or take the book or answer sheet from the testing room.

## Scoring

- For each correct answer, you receive one point.
- For questions you omit, you receive no points.
- For a wrong answer to a multiple-choice question, you lose a fraction of a point.
  - If you can eliminate one or more of the answer choices as wrong, however, you increase your chances of choosing the correct answer and earning one point.
  - If you can't eliminate any choice, move on. You can return to the question later if there is time.
- For a wrong answer to a math question that is not multiple-choice, you don't lose any points.

8. Form Code				
(A)	(A)	(0)	(0)	(0)
(B)	(B)	(1)	(1)	(1)
(C)	(C)	(2)	(2)	(2)
(D)	(D)	(3)	(3)	(3)
(E)	(E)	(4)	(4)	(4)
(F)	(F)	(5)	(5)	(5)
(G)	(G)	(6)	(6)	(6)
(H)	(H)	(7)	(7)	(7)
(I)	(I)	(8)	(8)	(8)
(J)	(J)	(9)	(9)	(9)
(K)	(K)			
(L)	(L)			
(M)	(M)			
(N)	(N)			
(O)	(O)			
(P)	(P)			
(Q)	(Q)			
(R)	(R)			
(S)	(S)			
(T)	(T)			
(U)	(U)			
(V)	(V)			
(W)	(W)			
(X)	(X)			
(Y)	(Y)			
(Z)	(Z)			

9. Test Form

The passages for this test have been adapted from published material. The ideas contained in them do not necessarily represent the opinions of the College Board or Educational Testing Service.

**DO NOT OPEN THIS BOOK UNTIL THE SUPERVISOR TELLS YOU TO DO SO.**

**1. Your Name**

First 4 letters of Last Name	First init.	Mid. init.
A A A A	A	A
B B B B	B	B
C C C C	C	C
D D D D	D	D
E E E E	E	E
F F F F	F	F
G G G G	G	G
H H H H	H	H
I I I I	I	I
J J J J	J	J
K K K K	K	K
L L L L	L	L
M M M M	M	M
N N N N	N	N
O O O O	O	O
P P P P	P	P
Q Q Q Q	Q	Q
R R R R	R	R
S S S S	S	S
T T T T	T	T
U U U U	U	U
V V V V	V	V
W W W W	W	W
X X X X	X	X
Y Y Y Y	Y	Y
Z Z Z Z	Z	Z

**2. Your Name:** \_\_\_\_\_  
 (Print) Last First M.I.

I agree to the conditions on the back of the SAT I test book.

Signature: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Home Address: \_\_\_\_\_  
 (Print) Number and Street

City State Zip Code

Center: \_\_\_\_\_  
 (Print) City State Center Number

**IMPORTANT:** Fill in items 8 and 9 exactly as shown on the back of test book.

**8. Form Code**  
 (Copy and grid as on back of test book.)

A	A	0	0	0
B	B	1	1	1
C	C	2	2	2
D	D	3	3	3
E	E	4	4	4
F	F	5	5	5
G	G	6	6	6
H	H	7	7	7
I	I	8	8	8
J	J	9	9	9
K	K			
L	L			
M	M			
N	N			
O	O			
P	P			
Q	Q			
R	R			
S	S			
T	T			
U	U			
V	V			
W	W			
X	X			
Y	Y			
Z	Z			

**3. Date of Birth**

Month	Day	Year
Jan. <input type="radio"/>		
Feb. <input type="radio"/>		
Mar. <input type="radio"/>	0 0	0 0
Apr. <input type="radio"/>	1 1	1 1
May <input type="radio"/>	2 2	2 2
June <input type="radio"/>	3 3	3 3
July <input type="radio"/>	4 4	4 4
Aug. <input type="radio"/>	5 5	5 5
Sept. <input type="radio"/>	6 6	6 6
Oct. <input type="radio"/>	7 7	7 7
Nov. <input type="radio"/>	8 8	8 8
Dec. <input type="radio"/>	9 9	9 9

**4. Social Security Number**

0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9

**6. Registration Number**  
 (Copy from Admission Ticket.)

0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

**7. Test Book Serial Number**  
 (Copy from front of test book.)

0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

**5. Sex**

Female  Male

**9. Test Form**  
 (Copy from back of test book.)

FOR ETS USE ONLY

Start with number 1 for each new section. If a section has fewer questions than answer spaces, leave the extra answer spaces blank.

<b>SECTION 1</b>	1	A B C D E	11	A B C D E	21	A B C D E	31	A B C D E
	2	A B C D E	12	A B C D E	22	A B C D E	32	A B C D E
	3	A B C D E	13	A B C D E	23	A B C D E	33	A B C D E
	4	A B C D E	14	A B C D E	24	A B C D E	34	A B C D E
	5	A B C D E	15	A B C D E	25	A B C D E	35	A B C D E
	6	A B C D E	16	A B C D E	26	A B C D E	36	A B C D E
	7	A B C D E	17	A B C D E	27	A B C D E	37	A B C D E
	8	A B C D E	18	A B C D E	28	A B C D E	38	A B C D E
	9	A B C D E	19	A B C D E	29	A B C D E	39	A B C D E
	10	A B C D E	20	A B C D E	30	A B C D E	40	A B C D E
<b>SECTION 2</b>	1	A B C D E	11	A B C D E	21	A B C D E	31	A B C D E
	2	A B C D E	12	A B C D E	22	A B C D E	32	A B C D E
	3	A B C D E	13	A B C D E	23	A B C D E	33	A B C D E
	4	A B C D E	14	A B C D E	24	A B C D E	34	A B C D E
	5	A B C D E	15	A B C D E	25	A B C D E	35	A B C D E
	6	A B C D E	16	A B C D E	26	A B C D E	36	A B C D E
	7	A B C D E	17	A B C D E	27	A B C D E	37	A B C D E
	8	A B C D E	18	A B C D E	28	A B C D E	38	A B C D E
	9	A B C D E	19	A B C D E	29	A B C D E	39	A B C D E
	10	A B C D E	20	A B C D E	30	A B C D E	40	A B C D E

Start with number 1 for each new section. If a section has fewer questions than answer spaces, leave the extra answer spaces blank.

**SECTION**  
**3**

- |    |     |     |     |     |     |
|----|-----|-----|-----|-----|-----|
| 1  | (A) | (B) | (C) | (D) | (E) |
| 2  | (A) | (B) | (C) | (D) | (E) |
| 3  | (A) | (B) | (C) | (D) | (E) |
| 4  | (A) | (B) | (C) | (D) | (E) |
| 5  | (A) | (B) | (C) | (D) | (E) |
| 6  | (A) | (B) | (C) | (D) | (E) |
| 7  | (A) | (B) | (C) | (D) | (E) |
| 8  | (A) | (B) | (C) | (D) | (E) |
| 9  | (A) | (B) | (C) | (D) | (E) |
| 10 | (A) | (B) | (C) | (D) | (E) |
| 11 | (A) | (B) | (C) | (D) | (E) |
| 12 | (A) | (B) | (C) | (D) | (E) |
| 13 | (A) | (B) | (C) | (D) | (E) |
| 14 | (A) | (B) | (C) | (D) | (E) |
| 15 | (A) | (B) | (C) | (D) | (E) |
- |    |     |     |     |     |     |
|----|-----|-----|-----|-----|-----|
| 16 | (A) | (B) | (C) | (D) | (E) |
| 17 | (A) | (B) | (C) | (D) | (E) |
| 18 | (A) | (B) | (C) | (D) | (E) |
| 19 | (A) | (B) | (C) | (D) | (E) |
| 20 | (A) | (B) | (C) | (D) | (E) |
| 21 | (A) | (B) | (C) | (D) | (E) |
| 22 | (A) | (B) | (C) | (D) | (E) |
| 23 | (A) | (B) | (C) | (D) | (E) |
| 24 | (A) | (B) | (C) | (D) | (E) |
| 25 | (A) | (B) | (C) | (D) | (E) |
| 26 | (A) | (B) | (C) | (D) | (E) |
| 27 | (A) | (B) | (C) | (D) | (E) |
| 28 | (A) | (B) | (C) | (D) | (E) |
| 29 | (A) | (B) | (C) | (D) | (E) |
| 30 | (A) | (B) | (C) | (D) | (E) |
- |    |     |     |     |     |     |
|----|-----|-----|-----|-----|-----|
| 31 | (A) | (B) | (C) | (D) | (E) |
| 32 | (A) | (B) | (C) | (D) | (E) |
| 33 | (A) | (B) | (C) | (D) | (E) |
| 34 | (A) | (B) | (C) | (D) | (E) |
| 35 | (A) | (B) | (C) | (D) | (E) |
| 36 | (A) | (B) | (C) | (D) | (E) |
| 37 | (A) | (B) | (C) | (D) | (E) |
| 38 | (A) | (B) | (C) | (D) | (E) |
| 39 | (A) | (B) | (C) | (D) | (E) |
| 40 | (A) | (B) | (C) | (D) | (E) |

If section 3 of your test book contains math questions that are not multiple-choice, continue to item 16 below. Otherwise, continue to item 16 above.

**ONLY ANSWERS ENTERED IN THE OVALS IN EACH GRID AREA WILL BE SCORED.**  
**YOU WILL NOT RECEIVE CREDIT FOR ANYTHING WRITTEN IN THE BOXES ABOVE THE OVALS.**

16				
	/	/		
.	.	.	.	.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

17				
	/	/		
.	.	.	.	.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

18				
	/	/		
.	.	.	.	.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

19				
	/	/		
.	.	.	.	.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

20				
	/	/		
.	.	.	.	.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

21				
	/	/		
.	.	.	.	.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

22				
	/	/		
.	.	.	.	.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

23				
	/	/		
.	.	.	.	.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

24				
	/	/		
.	.	.	.	.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

25				
	/	/		
.	.	.	.	.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

**BE SURE TO ERASE ANY ERRORS OR STRAY MARKS COMPLETELY.**

**DO NOT WRITE IN THIS AREA.**

0

**PLEASE PRINT YOUR INITIALS**

First	Middle	Last



Start with number 1 for each new section. If a section has fewer questions than answer spaces, leave the extra answer spaces blank.

<b>SECTION</b> <b>5</b>	1 (A) (B) (C) (D) (E) 2 (A) (B) (C) (D) (E) 3 (A) (B) (C) (D) (E) 4 (A) (B) (C) (D) (E) 5 (A) (B) (C) (D) (E) 6 (A) (B) (C) (D) (E) 7 (A) (B) (C) (D) (E) 8 (A) (B) (C) (D) (E) 9 (A) (B) (C) (D) (E) 10 (A) (B) (C) (D) (E)	11 (A) (B) (C) (D) (E) 12 (A) (B) (C) (D) (E) 13 (A) (B) (C) (D) (E) 14 (A) (B) (C) (D) (E) 15 (A) (B) (C) (D) (E) 16 (A) (B) (C) (D) (E) 17 (A) (B) (C) (D) (E) 18 (A) (B) (C) (D) (E) 19 (A) (B) (C) (D) (E) 20 (A) (B) (C) (D) (E)	21 (A) (B) (C) (D) (E) 22 (A) (B) (C) (D) (E) 23 (A) (B) (C) (D) (E) 24 (A) (B) (C) (D) (E) 25 (A) (B) (C) (D) (E) 26 (A) (B) (C) (D) (E) 27 (A) (B) (C) (D) (E) 28 (A) (B) (C) (D) (E) 29 (A) (B) (C) (D) (E) 30 (A) (B) (C) (D) (E)	31 (A) (B) (C) (D) (E) 32 (A) (B) (C) (D) (E) 33 (A) (B) (C) (D) (E) 34 (A) (B) (C) (D) (E) 35 (A) (B) (C) (D) (E) 36 (A) (B) (C) (D) (E) 37 (A) (B) (C) (D) (E) 38 (A) (B) (C) (D) (E) 39 (A) (B) (C) (D) (E) 40 (A) (B) (C) (D) (E)
<b>SECTION</b> <b>6</b>	1 (A) (B) (C) (D) (E) 2 (A) (B) (C) (D) (E) 3 (A) (B) (C) (D) (E) 4 (A) (B) (C) (D) (E) 5 (A) (B) (C) (D) (E)	6 (A) (B) (C) (D) (E) 7 (A) (B) (C) (D) (E) 8 (A) (B) (C) (D) (E) 9 (A) (B) (C) (D) (E) 10 (A) (B) (C) (D) (E)	11 (A) (B) (C) (D) (E) 12 (A) (B) (C) (D) (E) 13 (A) (B) (C) (D) (E) 14 (A) (B) (C) (D) (E) 15 (A) (B) (C) (D) (E)	16 (A) (B) (C) (D) (E) 17 (A) (B) (C) (D) (E) 18 (A) (B) (C) (D) (E) 19 (A) (B) (C) (D) (E) 20 (A) (B) (C) (D) (E)
<b>SECTION</b> <b>7</b>	1 (A) (B) (C) (D) (E) 2 (A) (B) (C) (D) (E) 3 (A) (B) (C) (D) (E) 4 (A) (B) (C) (D) (E) 5 (A) (B) (C) (D) (E)	6 (A) (B) (C) (D) (E) 7 (A) (B) (C) (D) (E) 8 (A) (B) (C) (D) (E) 9 (A) (B) (C) (D) (E) 10 (A) (B) (C) (D) (E)	11 (A) (B) (C) (D) (E) 12 (A) (B) (C) (D) (E) 13 (A) (B) (C) (D) (E) 14 (A) (B) (C) (D) (E) 15 (A) (B) (C) (D) (E)	16 (A) (B) (C) (D) (E) 17 (A) (B) (C) (D) (E) 18 (A) (B) (C) (D) (E) 19 (A) (B) (C) (D) (E) 20 (A) (B) (C) (D) (E)

**CERTIFICATION STATEMENT**

Copy the statement below (do not print) and sign your name as you would an official document.

I hereby agree to the conditions set forth in the *Registration Bulletin* and certify that I am the person whose name and address appear on this answer sheet.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_



**SECTION 1**  
**Time — 30 minutes**  
**35 Questions**

**Directions:** For each question in this section, select the best answer from among the choices given and fill in the corresponding oval on the answer sheet.

Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five words or sets of words labeled A through E. Choose the word or set of words that, when inserted in the sentence, best fits the meaning of the sentence as a whole.

**Example:**

Medieval kingdoms did not become constitutional republics overnight; on the contrary, the change was -----.

- (A) unpopular (B) unexpected  
(C) advantageous (D) sufficient  
(E) gradual

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

1. In the Renaissance, when few women were formally educated and most were forced to marry, the rebellious Cecilia Gonzaga succeeded in ----- scholarship and ----- the marriage planned for her.
  - (A) obtaining . . succumbing to
  - (B) escaping . . subverting
  - (C) pursuing . . avoiding
  - (D) ignoring . . observing
  - (E) disavowing . . enjoying
2. During the day, downpours were -----, starting and stopping at nearly regular intervals.
  - (A) unmediated (B) spontaneous (C) periodic
  - (D) incidental (E) endemic
3. As a physicist, Veronica is a gifted -----; she loves to go beyond particular facts and speculate about general principles.
  - (A) dogmatist (B) consultant (C) prodigy
  - (D) materialist (E) theorist
4. Although hostile demonstrations and ----- marred James Meredith's 1962 enrollment at the University of Mississippi, the commencement ceremony in which he became the university's first African American graduate was surprisingly -----.
  - (A) discord . . tranquil
  - (B) pomp . . daunting
  - (C) banality . . conventional
  - (D) turmoil . . controversial
  - (E) serenity . . opportune
5. The editor's comment was not intended as a criticism, but as a ----- by which she sought further clarification.
  - (A) query (B) confession (C) dismissal
  - (D) condemnation (E) credo
6. Although Clifton often appeared -----, he actually devoted ----- amount of time trying to keep up a neat appearance.
  - (A) orderly . . an enormous
  - (B) disheveled . . an inordinate
  - (C) annoyed . . an unfortunate
  - (D) distracted . . an unrealistic
  - (E) agitated . . a considerable
7. In 1991 salsa ----- ketchup as the best-selling condiment in the United States, outselling ketchup by \$40 million in retail stores.
  - (A) supplanted (B) redoubled (C) augmented
  - (D) brandished (E) evaded
8. The Earth's oceans sustain a ----- of marine creatures, an abundance that makes the seas teem with life and activity.
  - (A) melee (B) profusion (C) configuration
  - (D) symmetry (E) dimension
9. The gentle flow of the speaker's words became increasingly balanced and rhythmic; such ----- oratory was quite hypnotic.
  - (A) cadent (B) specious (C) convoluted
  - (D) adulatory (E) impassioned
10. The ----- of the art world, its "apparent inviolability," was sullied in 1997 when investigators uncovered several dubious art transactions.
  - (A) turpitude (B) sacrosanctity (C) perspicuity
  - (D) verisimilitude (E) duplicity



Each question below consists of a related pair of words or phrases, followed by five pairs of words or phrases labeled A through E. Select the pair that best expresses a relationship similar to that expressed in the original pair.

**Example:**

CRUMB : BREAD ::

- (A) ounce : unit
- (B) splinter : wood
- (C) water : bucket
- (D) twine : rope
- (E) cream : butter



11. COAL : MINERAL ::

- (A) oxygen : water
- (B) river : dam
- (C) gold : metal
- (D) silver : mine
- (E) laboratory : chemical

12. TRAIL : HIKERS ::

- (A) airport : pilots
- (B) pasture : horses
- (C) highway : motorists
- (D) forest : animals
- (E) track : footprints

13. COMPETITION : CONTESTANT ::

- (A) trial : witness
- (B) journey : traveler
- (C) royalty : monarch
- (D) cure : patient
- (E) election : candidate

14. GONG : MALLET ::

- (A) guitar : string
- (B) orchestra : baton
- (C) clarinet : reed
- (D) maraca : rattle
- (E) drum : stick

15. ARCHIVE : DOCUMENTS ::

- (A) warehouse : merchandise
- (B) theater : plays
- (C) cinema : projector
- (D) library : shelves
- (E) farm : crops

16. RIDDLE : PUZZLEMENT ::

- (A) comedy : stage
- (B) clown : costume
- (C) quip : wit
- (D) jest : laughter
- (E) pun : meaning

17. INVENTORY : GOODS ::

- (A) agenda : meeting
- (B) snapshot : image
- (C) ballot : voters
- (D) compass : directions
- (E) roll : members

18. INNUMERABLE : QUANTITY ::

- (A) superficial : surface
- (B) impotent : strength
- (C) invaluable : worth
- (D) finite : size
- (E) inexpressive : feeling

19. REHASH : DISCUSS ::

- (A) reprimand : scold
- (B) reject : want
- (C) rejoice : praise
- (D) reiterate : state
- (E) relish : taste

20. EPITAPH : COMMEMORATE ::

- (A) badge : identify
- (B) letter : address
- (C) contract : agree
- (D) inscription : write
- (E) invoice : pay

21. DISINTERESTED : FAVORITISM ::

- (A) urbane : civility
- (B) modest : reserve
- (C) adversarial : cooperativeness
- (D) dilatory : procrastination
- (E) dissipated : pleasure

22. WHEEDLE : CAJOLERY ::

- (A) deceive : subterfuge
- (B) distribute : parity
- (C) delight : mimicry
- (D) alienate : cohesion
- (E) dissemble : demeanor

23. REMISS : DUTIFULNESS ::

- (A) redoubtable : awe
- (B) careful : compulsion
- (C) hysterical : calamity
- (D) intemperate : moderation
- (E) diplomatic : tact



The passage below is followed by questions based on its content. Answer the questions on the basis of what is stated or implied in the passage and in any introductory material that may be provided.

**Questions 24-35 are based on the following passage.**

*This discussion of vervet monkeys is from a 1984 book about animal communication.*

Vervet monkeys have at least three different categories of alarm calls. When a leopard or other large carnivorous mammal approaches, the monkeys give one type of alarm call; quite a different call is used at the sight of a martial eagle, one of the few flying predators that captures vervet monkeys. A third type of alarm call is given when a large snake approaches the group. This degree of differentiation of alarm calls is not unique, although it has been described in only a few kinds of animals. When ethologists, who study animal behavior, interpret data of this kind, they require proof that variations in animal communication signals convey anything more than information about the communicator's internal state.

The first and relatively simple question is whether the vervet monkey's three types of alarm calls convey to other monkeys information about the type of predator. Such information is important, because the animal's defensive tactics are different in the three cases. When a leopard approaches, the monkeys climb into trees. But leopards are good climbers, so the monkeys can escape them only by climbing out onto the smallest branches, which are too weak to support a leopard. When the monkeys see a martial eagle, they move into thick vegetation close to a tree trunk or at ground level. Thus the tactics that help escape from a leopard make them highly vulnerable to a martial eagle, and vice versa. In response to the threat of a large snake, they stand on their hind legs and look around to locate the snake, then simply move away from it, either along the ground or by climbing into a tree.

Knowing that the monkeys give different alarm calls when they see different predators does not establish beyond a doubt that the calls actually describe the type of predator. When the monkeys, which are usually close to each other, hear an alarm call, each one quickly looks around at the caller. Like many other animals, they are adept at judging the direction in which another animal is looking, so they can easily see what the caller is looking at. This serves much the same function as pointing. When monkeys other than the caller take the appropriate action to avoid the danger, it is difficult to be sure whether they are acting solely on the basis of the call or whether the call simply led them to look at the source of the danger.

To clarify this situation, researchers conducted some carefully controlled playback experiments under natural conditions. The basic idea was to play from a concealed

loudspeaker tape recordings of vervet alarm calls when vervets had just seen a leopard, a martial eagle, or a large python, and to inquire whether these playbacks, in the absence of a predator, would elicit the normal response.

50 The experiments required many precautions and refinements. For instance, vervet monkeys come to know each other as individuals, not only by visual appearance but by minor differences in their vocalizations. They might not respond even to an alarm call recorded from one of their own companions if that individual was in plain sight some distance from the vegetation concealing the speaker. In all experiments, the loudspeaker reproduced calls of a member of the group, and the speaker was hidden in a place where the monkeys would expect that individual to be. The experiments had to be prepared with tape recordings of a known member of a well-studied group of vervet monkeys and a hidden speaker located where this individual frequently spends time.

When all these conditions were satisfied, the playbacks of alarm calls did indeed elicit the appropriate responses. The monkeys responded to the leopard alarm call by climbing into the nearest tree; the martial eagle alarm caused them to dive into thick vegetation; and the python alarm produced the typical behavior of standing on the hind legs and looking all around for the nonexistent snake.

Not all ethologists have accepted the straightforward interpretation that the alarm calls convey information about the type of predator. One alternative interpretation is that the alarm calls are injunctions to behave in certain ways. Thus the leopard alarm might mean "Go climb into a tree." But even this interpretation necessarily ascribes three specific types of injunction to the vocabulary of vervet monkeys. Even such postulated injunctions would be more than a simple reflection of the internal state of the communicator.

24. The passage indicates that the calls described in lines 1-7 are significant primarily because they
- (A) show that animals are capable of expressing emotion
  - (B) prove that some animals are more intelligent than others
  - (C) noticeably improve the monkeys' rate of reproduction
  - (D) represent a departure from the monkeys' predictable patterns of communication
  - (E) prompt questions about the potential extent of animal communication



25. In lines 9-13 (“When . . . state”), the author’s observation about ethologists implies that they
- (A) are dismissive of issues that concern other biologists
  - (B) limit themselves by their reliance on traditional explanations of animal behavior
  - (C) fail to account for discrepancies between field and laboratory observations
  - (D) try to avoid unjustified conclusions about the meaning of a phenomenon
  - (E) use an approach that sometimes arouses resentment
26. What is the relationship between the first paragraph (lines 1-13) and the “simple question” mentioned in lines 14-16 ?
- (A) The first paragraph contains evidence that will answer the question.
  - (B) The question arises from information in the first paragraph.
  - (C) The question makes light of the view presented in the first paragraph.
  - (D) The first paragraph outlines the way the question will be answered in the rest of the passage.
  - (E) The question defines an unorthodox view that was discounted in the first paragraph.
27. In lines 18-24 (“When a leopard . . . level”), the author juxtaposes two kinds of behavior in order to
- (A) show how the presence of more than one observer in the field yields conflicting information
  - (B) provide evidence that challenges an accepted theory about monkey communication
  - (C) compare a unique form of defense to a more common form of defense
  - (D) explain how the monkeys imitate behavior of other animals
  - (E) emphasize the usefulness of different responses in different situations
28. The third paragraph (lines 30-42) contributes to the development of the passage primarily by
- (A) indicating an interpretation that is eventually ruled out
  - (B) showing the necessity of multiple explanations
  - (C) describing an alternate method of observation
  - (D) supporting a hypothesis with observations from the field
  - (E) drawing an analogy between animal and human behavior
29. When designing the experiments described in lines 43-63, researchers had to consider all of the following EXCEPT
- (A) the location of certain monkeys in the group
  - (B) the monkeys’ familiarity with one another
  - (C) the location of the equipment
  - (D) the vocalization of predators
  - (E) individual differences among the monkeys’ calls
30. According to lines 43-63, which action would likely keep the monkeys from responding to the recorded calls?
- (A) Locating the loudspeaker far from where the individual whose voice it broadcasts can be seen
  - (B) Playing the calls during feeding or grooming periods
  - (C) Playing the calls so often that the monkeys become accustomed to them and fail to react
  - (D) Allowing the monkeys to detect the presence of the human observers
  - (E) Interfering with the hunting routines of the usual predators
31. In line 64, “satisfied” most nearly means
- (A) convinced
  - (B) dispelled
  - (C) fulfilled
  - (D) appeased
  - (E) compensated
32. The experiments described in the passage provide evidence that most directly supports the conclusion that vervet monkeys
- (A) are highly adaptable to changing environmental conditions
  - (B) respond to the presence of predators with calls particular to each danger
  - (C) tolerate individuals who do not pose an immediate threat
  - (D) protect themselves by mimicking the calls of certain predators
  - (E) illustrate the ability of most mammals to communicate information



33. The author's reaction to an "alternative interpretation" (line 73) is best characterized as
- (A) offended, because it disregards the author's own observations
  - (B) skeptical, because it perpetrates the falsehood that monkeys possess human traits
  - (C) supportive, because it provides proof for a hypothesis
  - (D) receptive, because it is consistent with the data
  - (E) respectful, because it is shared by many experienced field researchers
34. The final paragraph primarily serves to
- (A) show how an objection to a hypothesis actually confirms one of its central elements
  - (B) introduce a personal interpretation of the findings
  - (C) suggest that responses to alarm calls are genetically determined
  - (D) cast doubt on the importance of a field of inquiry
  - (E) indicate the kinds of questions that are not susceptible to further study
35. The author uses vervet monkeys to convey which point about animal communication?
- (A) Animal vocalizations are modeled after human sounds.
  - (B) Some animals can impart vocally specific information about their observations.
  - (C) Most animals respond differently to different alarm calls.
  - (D) Animals vocalize primarily to communicate an internal state.
  - (E) Most animals exhibit an acute sense of hearing when sensing predators.

**STOP**

If you finish before time is called, you may check your work on this section only.  
Do not turn to any other section in the test.

**NO TEST MATERIAL ON THIS PAGE**



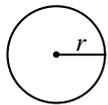
**SECTION 2**  
Time — 30 minutes  
25 Questions

**Directions:** 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.

**Notes:**

- The use of a calculator is permitted. All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.

Reference Information

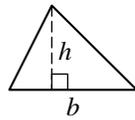


$$A = \pi r^2$$

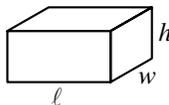
$$C = 2\pi r$$



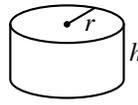
$$A = \ell w$$



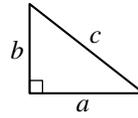
$$A = \frac{1}{2}bh$$



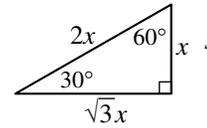
$$V = \ell wh$$



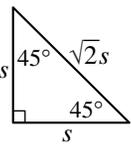
$$V = \pi r^2 h$$



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



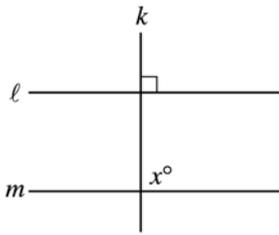
Special Right Triangles



The number of degrees of arc in a circle is 360.  
The measure in degrees of a straight angle is 180.  
The sum of the measures in degrees of the angles of a triangle is 180.

1. If  $\frac{x^2 + n}{x^2 + 4} = 1$ , then  $n =$
- (A) 4  
(B) 3  
(C) 1  
(D)  $\frac{1}{4}$   
(E) -3

2. On a certain job, Robin was paid \$6 an hour for the first 10 hours she worked. For the time she worked beyond 10 hours, she was paid \$9 an hour. If she worked 20 hours on this job, how much was Robin paid?
- (A) \$60  
(B) \$90  
(C) \$120  
(D) \$150  
(E) \$180



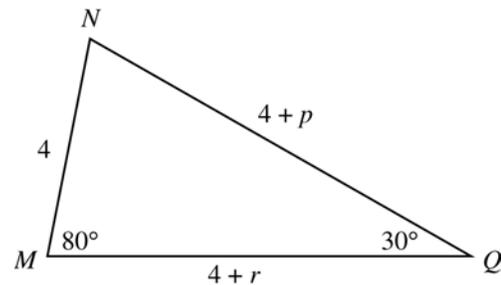
**Note:** Figure not drawn to scale.

3. In the figure above, lines  $l$  and  $m$  are not parallel. Which of the following CANNOT be the value of  $x$ ?
- (A) 89  
(B) 90  
(C) 91  
(D) 92  
(E) 93

4. If  $x^2 = k$ , where  $x$  and  $k$  are integers, which of the following could be the value of  $k$ ?
- (A) 3  
(B) 6  
(C) 9  
(D) 12  
(E) 15

5. When a number  $x$  is subtracted from 36 and the difference is divided by  $x$ , the result is 2. What is the value of  $x$ ?
- (A) 12  
(B) 17  
(C) 18  
(D) 21  
(E) 24

6. A class has twice as many boys as girls. The students in the class stand in one line, with a girl at the front of the line. Which of the following must be true?
- (A) The last person in line is a girl.  
(B) The last person in line is a boy.  
(C) There are more girls than boys in the class.  
(D) There are at least two girls standing next to each other.  
(E) There are at least two boys standing next to each other.



7. In the triangle above, which of the following must be true?
- (A)  $p = r$   
(B)  $p < r$   
(C)  $p > r$   
(D)  $p = 4$   
(E)  $p > 4$

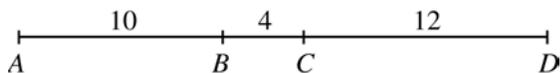


8. For all positive integers  $a$  and  $b$ , if  $a \neq b$ , let  $a \diamond b$  be defined as  $\frac{a+b}{a-b}$ . What is the value of  $1,011 \diamond 11$ ?

- (A) 1.011  
(B) 1.022  
(C) 1.121  
(D) 2.111  
(E) 10.220

9. If  $3^{x-2} = 3$ , then  $x =$

- (A) 1  
(B) 2  
(C) 3  
(D) 4  
(E) 5



10. In the figure above, points  $B$  and  $C$  divide line segment  $AD$  as shown. What is the length of the line segment whose endpoints are the midpoints of line segments  $AB$  and  $CD$ ?

- (A) 15  
(B) 13  
(C) 11  
(D) 8  
(E) 7

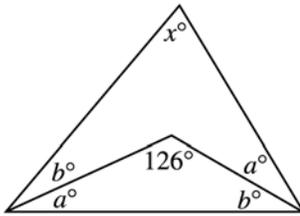


11. If a card is to be selected at random from those in the figure above, which of the following has the greatest probability of being selected?

- (A) A card with a letter  
(B) A card with a number  
(C) A card with stripes  
(D) A card with dots  
(E) A card with both a letter and stripes

12. If  $a$  is an even integer and  $b$  is an odd integer, which of the following must be even?

- (A)  $ab + 1$   
(B)  $a^2 + 3$   
(C)  $a^2 + b^2$   
(D)  $a^2b^2 + 1$   
(E)  $b^2 + 3$



Note: Figure not drawn to scale.

13. In the figure above, what is the value of  $x$ ?

(A) 72  
(B) 70  
(C) 68  
(D) 66  
(E) 64

14. The sum of four consecutive odd integers  $w$ ,  $x$ ,  $y$ , and  $z$  is 24. What is the median of the set  $\{w, x, y, z, 24\}$ ?

(A) 3  
(B) 5  
(C) 7  
(D) 9  
(E) 24

15. Which of the following is equal in value to 1 plus (100 percent of 1)?

(A) 100 percent of 1  
(B) 101 percent of 1  
(C) 110 percent of 1  
(D) 200 percent of 1  
(E) 201 percent of 1

16. The ratio of  $j$  to  $k$  to  $l$  to  $m$  to  $p$  is 5 to 4 to 3 to 2 to 1. If  $j = 60$ , what is the value of  $m$ ?

(A) 8  
(B) 12  
(C) 24  
(D) 55  
(E) 57

17. Lines  $\ell$  and  $m$  and two circles lie in a plane. If  $\ell$  passes through the centers of the two circles and if  $m$  is parallel to  $\ell$ , which of the following could NOT be the number of points at which  $m$  intersects the circles?

(A) 0  
(B) 1  
(C) 3  
(D) 4  
(E) 5



18. The first term of a sequence of numbers is  $-3$ . Each term after the first is obtained by multiplying the preceding term by  $-1$  and then subtracting 1. What is the 75th term of the sequence?

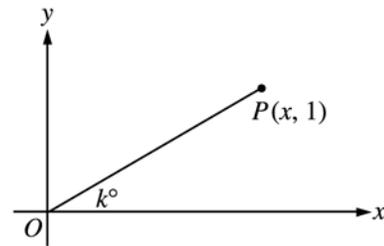
(A)  $-73$   
 (B)  $-3$   
 (C)  $2$   
 (D)  $4$   
 (E)  $73$

19. In a certain school, there are  $k$  classes with  $n$  students in each class. If a total of  $p$  pencils are distributed equally among these students, how many pencils are there for each student?

(A)  $\frac{p}{kn}$   
 (B)  $\frac{kn}{p}$   
 (C)  $\frac{kp}{n}$   
 (D)  $\frac{np}{k}$   
 (E)  $npk$

20. If 14 milliliters of a certain liquid has a mass of 16 grams, what is the mass, in grams, of 28 liters of this liquid? (1 liter = 1,000 milliliters.)

(A)  $8$   
 (B)  $32$   
 (C)  $3,200$   
 (D)  $8,000$   
 (E)  $32,000$



21. In the figure above, if  $k = 30$ , what is the  $x$ -coordinate of point  $P$ ?

(A)  $1$   
 (B)  $\sqrt{2}$   
 (C)  $\sqrt{3}$   
 (D)  $2$   
 (E)  $\sqrt{5}$

22. If  $x - 3 < 2$  and  $y + 1 < -3$ , then the value of  $x + y$  could be

(A)  $0$   
 (B)  $1$   
 (C)  $2$   
 (D)  $4$   
 (E)  $8$



	$a$	$b$	$c$	$d$
$a$	0	4	7	8
$b$	-	0	3	4
$c$	-	-	0	1
$d$	-	-	-	0

23. The table above shows the results of subtracting the numbers  $a$ ,  $b$ ,  $c$ , and  $d$  from each other. Each number in the body of the table gives the difference when the number at the far left of the table is subtracted from the number at the top of the table. For example,  $d - a = 8$ . If  $c = 20$ , what is the value of  $a + b + c + d$ ?
- (A) 63  
(B) 65  
(C) 67  
(D) 69  
(E) 71

24. If  $a$  and  $x$  represent real numbers for which  $x^2 = -a$ , which of the following statements could be true?
- I.  $a > 0$   
II.  $a = 0$   
III.  $a < 0$
- (A) None  
(B) II only  
(C) III only  
(D) I and II only  
(E) II and III only

25. In a bag of marbles,  $\frac{1}{2}$  of the marbles are red,  $\frac{1}{4}$  of them are green, and  $\frac{1}{5}$  of them are blue. If the remaining 2 marbles are white, what is the number of green marbles in the bag?
- (A) 4  
(B) 5  
(C) 8  
(D) 10  
(E) 40

**STOP**

If you finish before time is called, you may check your work on this section only.  
Do not turn to any other section in the test.

## SECTION 3

Time — 30 minutes

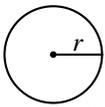
25 Questions

**Directions:** This section contains two types of questions. You have 30 minutes to complete both types. You may use any available space for scratchwork.

**Notes:**

- The use of a calculator is permitted. All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.

Reference Information

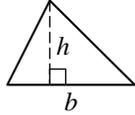


$$A = \pi r^2$$

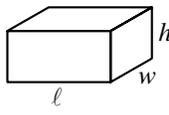
$$C = 2\pi r$$



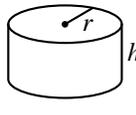
$$A = \ell w$$



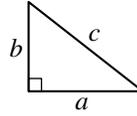
$$A = \frac{1}{2}bh$$



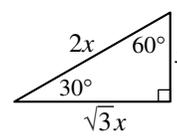
$$V = \ell wh$$



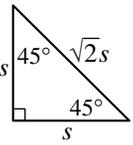
$$V = \pi r^2 h$$



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



Special Right Triangles



The number of degrees of arc in a circle is 360.  
The measure in degrees of a straight angle is 180.  
The sum of the measures in degrees of the angles of a triangle is 180.

**Directions for Quantitative Comparison Questions**

**Questions 1-15** each consist of two quantities in boxes, one in Column A and one in Column B. You are to compare the two quantities and on the answer sheet fill in oval

- A if the quantity in Column A is greater;  
B if the quantity in Column B is greater;  
C if the two quantities are equal;  
D if the relationship cannot be determined from the information given.

**AN E RESPONSE WILL NOT BE SCORED.**

**Notes:**

- In some questions, information is given about one or both of the quantities to be compared. In such cases, the given information is centered above the two columns and is not boxed.
- In a given question, a symbol that appears in both columns represents the same thing in Column A as it does in Column B.
- Letters such as  $x$ ,  $n$ , and  $k$  stand for real numbers.

		EXAMPLES		
		Column A	Column B	Answers
E1	<input type="text" value="5^2"/>	<input type="text" value="20"/>		<input checked="" type="radio"/> (A) <input type="radio"/> (B) <input type="radio"/> (C) <input type="radio"/> (D) <input type="radio"/> (E)
E2	<input type="text" value="x"/>	<input type="text" value="30"/>		<input type="radio"/> (A) <input type="radio"/> (B) <input checked="" type="radio"/> (C) <input type="radio"/> (D) <input type="radio"/> (E)
E3	<input type="text" value="r + 1"/>	<input type="text" value="s - 1"/>	$r$ and $s$ are integers.	<input type="radio"/> (A) <input type="radio"/> (B) <input type="radio"/> (C) <input checked="" type="radio"/> (D) <input type="radio"/> (E)

GO ON TO THE NEXT PAGE

## SUMMARY DIRECTIONS FOR COMPARISON QUESTIONS

**Answer:** **A** if the quantity in Column A is greater;  
**B** if the quantity in Column B is greater;  
**C** if the two quantities are equal;  
**D** if the relationship cannot be determined from the information given.

Column A

Column B

$$k > 0$$

1.

$$(-1)(-2)(-k)$$

$$(1)(2)(k)$$

On a map, a 2-inch line segment represents an actual distance of 5 miles.

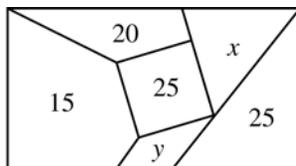
2.

The length of a line segment on the map that represents an actual distance of 3 miles

1 inch

$m$  and  $k$  are positive integers.  
 $m + k = 3$

3.

 $m$  $k$ 

Note: Figure not drawn to scale.

The rectangular lot is divided into six subdivisions whose areas, in acres, are shown. The total area of the lot is 100 acres.

4.

 $(x + y)$  acres

25 percent of the area of the rectangular lot

Column A

Column B

$$x > 2$$

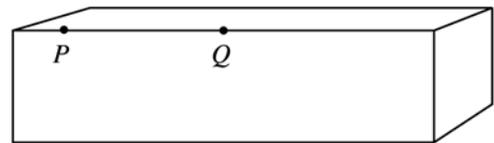
5.

 $x$ 

2.5

$$\frac{x}{y} = \frac{3}{5}$$

6.

 $\frac{2y}{x}$  $\frac{2x}{y}$ 

The rectangular solid is to be cut into two rectangular solids.

7.

The total surface area of the two resulting pieces if the cut is made through point  $P$

The total surface area of the two resulting pieces if the cut is made through point  $Q$

$$(n + 3)^2 - 9 = y$$

$$n > 0$$

8.

 $n^2$  $y$

## SUMMARY DIRECTIONS FOR COMPARISON QUESTIONS

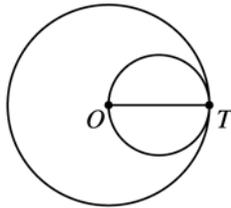
**Answer:** A if the quantity in Column A is greater;  
 B if the quantity in Column B is greater;  
 C if the two quantities are equal;  
 D if the relationship cannot be determined from the information given.

Column A

Column B

$h$  is a multiple of 4.  
 $k$  is a multiple of 8.

9.

 $h$  $k$ 

The outer circle has center  $O$  and circumference  $p$ .  
 $OT$  is a diameter of the inner circle.

10.

The circumference of the inner circle

 $\frac{1}{2}p$ 

$$1 < s + t < r$$

11.

 $\frac{r + s + t}{r - s - t}$ 

0

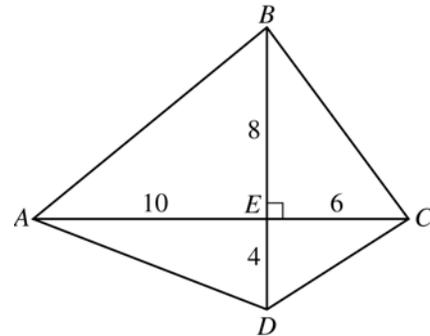
$x$ ,  $y$ ,  $s$ , and  $t$  are positive integers.  
 $x < y < 10$   
 $s < t < 10$

12.

The maximum possible value of  $y - x$ The minimum possible value of  $s + t$ 

Column A

Column B



The diagonals of quadrilateral  $ABCD$  intersect at right angles at  $E$ .  $AE = 10$ ,  $BE = 8$ ,  $CE = 6$ , and  $DE = 4$ .

13.

 $AB^2 + CD^2$  $AD^2 + BC^2$ 

For all positive integers  $j$  and  $k$ , let  $j \diamond k$  be defined to be the sum of the  $k$  consecutive integers beginning with  $j$ . For example,  
 $9 \diamond 4 = 9 + 10 + 11 + 12$ .

14.

 $100 \diamond 99$  $99 \diamond 100$ 

Angle  $B$  in  $\triangle ABC$  and angle  $S$  in  $\triangle RST$  are right angles. The lengths of sides  $AC$  and  $RT$  are equal.

15.

The length of side  $AB$ The length of side  $RS$ 

GO ON TO THE NEXT PAGE

### Directions for Student-Produced Response Questions

Each of the remaining 10 questions requires you to solve the problem and enter your answer by marking the ovals in the special grid, as shown in the examples below.

Answer:  $\frac{7}{12}$  or  $7/12$

Write answer in boxes. →

7	/	1	2
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○

← Fraction line

Grid in result. →

Answer: 2.5

2	.	5	
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○

← Decimal point

Answer: 201  
Either position is correct.

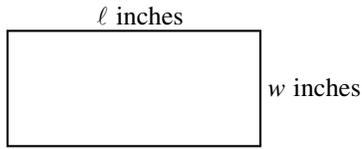
2	0	1	
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○

**Note:** You may start your answers in any column, space permitting. Columns not needed should be left blank.

- Mark no more than one oval in any column.
  - Because the answer sheet will be machine-scored, **you will receive credit only if the ovals are filled in correctly.**
  - Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the ovals accurately.
  - Some problems may have more than one correct answer. In such cases, grid only one answer.
  - No question has a negative answer.
  - **Mixed numbers** such as  $2\frac{1}{2}$  must be gridded as 2.5 or 5/2. (If  $\frac{21}{10}$  is gridded, it will be interpreted as  $\frac{21}{2}$ , not  $2\frac{1}{2}$ .)
  - **Decimal Accuracy:** If you obtain a decimal answer, **enter the most accurate value the grid will accommodate.** For example, if you obtain an answer such as 0.6666 . . . , you should record the result as .666 or .667. **Less accurate values such as .66 or .67 are not acceptable.**
- Acceptable ways to grid  $\frac{2}{3} = .6666 \dots$
- |   |   |   |   |
|---|---|---|---|
| 2 | / | 3 |   |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
- |   |   |   |   |
|---|---|---|---|
| . | 6 | 6 | 6 |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
- |   |   |   |   |
|---|---|---|---|
| . | 6 | 6 | 7 |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |

16. If  $3x - 5 = x + 8$ , what is the value of  $x$ ?

17. A store has 660 books in stock. If 30 percent of these books are on sale, how many books are not on sale?



Note: Figure not drawn to scale.

18. The perimeter of the rectangle above is  $p$  inches and the area of the rectangle is 36 square inches. If  $l$  and  $w$  are integers, what is one possible value of  $p$ ?

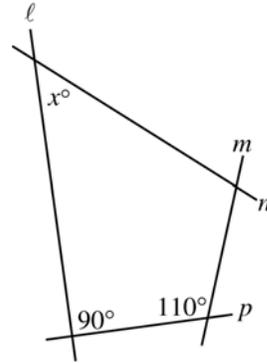
19. If  $x + \frac{1}{x} = 2$ , what is the value of  $x^2 + \frac{1}{x^2}$ ?

20. If  $\frac{1}{4}$  of  $\frac{4}{3}$  is subtracted from 2, what is the resulting value?

21. Tim wrote a seven-digit phone number on a piece of paper. He later tore the paper accidentally and the last two digits were lost. What is the maximum number of arrangements of two digits, using the digits 0 through 9, that he could use in attempting to reconstruct the correct phone number?

22. If the slope of the line that passes through the points  $(a, 0)$  and  $(1, -2)$  is  $\frac{1}{2}$ , what is the value of  $a$ ?

23.  $\lfloor x \rfloor$  is defined as the greatest integer less than  $x$ .  
 $\lceil x \rceil$  is defined as the least integer greater than  $x$ .  
 What is the value of  $\lceil 25.8 \rceil - \lfloor 13.9 \rfloor$ ?



24. In the figure above, if the angle (not shown) where lines  $n$  and  $p$  intersect is twice as large as the angle (also not shown) where lines  $l$  and  $m$  intersect, what is the value of  $x$ ?
25. One adult and 10 children are in an elevator. If the adult's weight is 4 times the average (arithmetic mean) weight of the children, then the adult's weight is what fraction of the total weight of the 11 people in the elevator?

**STOP**

If you finish before time is called, you may check your work on this section only.  
 Do not turn to any other section in the test.



## SECTION 4

Time — 30 minutes

30 Questions

**Directions:** For each question in this section, select the best answer from among the choices given and fill in the corresponding oval on the answer sheet.

Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five words or sets of words labeled A through E. Choose the word or set of words that, when inserted in the sentence, best fits the meaning of the sentence as a whole.

**Example:**

Medieval kingdoms did not become constitutional republics overnight; on the contrary, the change was -----.

- (A) unpopular (B) unexpected  
(C) advantageous (D) sufficient  
(E) gradual

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

- Despite the wide-ranging curiosity about her personal life, Eleanor Roosevelt enjoyed a degree of ----- that today's highly scrutinized public figures can only -----.  
(A) privacy . . envy  
(B) popularity . . celebrate  
(C) privilege . . imitate  
(D) isolation . . regret  
(E) generosity . . refuse
- Unable to decide between a career in biology and one in philosophy, Gwen ----- her two interests and became a medical ethicist.  
(A) reclaimed (B) merged (C) defined  
(D) abandoned (E) conveyed
- The incompetent judge conducted the hearing in so ----- a manner that the entire proceeding was considered a -----, an insult to the standards of the judicial system.  
(A) apathetic . . victory  
(B) exacting . . spectacle  
(C) astute . . debacle  
(D) negligent . . travesty  
(E) surreptitious . . triumph
- Constance was ----- by the speech, regarding such criticisms of her company as extremely annoying.  
(A) fascinated (B) galled (C) uplifted  
(D) soothed (E) disoriented
- Steven tried hard to give up sweets, but he found it particularly difficult to ----- chocolate.  
(A) digest (B) extol (C) impugn  
(D) forgo (E) relish
- At first merely -----, his actions grew so bewildering and bizarre as to appear entirely ----- to us.  
(A) dignified . . mystifying  
(B) perplexing . . inexplicable  
(C) eccentric . . stolid  
(D) intriguing . . reasonable  
(E) logical . . questionable
- Rather than focusing on the ----- sequence of events, the historian E.M.W. Tillyard ----- a chronological approach and portrays, instead, the dominant belief patterns of an age.  
(A) rational . . acknowledges  
(B) temporal . . avoids  
(C) universal . . embraces  
(D) qualitative . . employs  
(E) unseen . . forsakes
- The fashion designer's new line of spring clothing was described in the style section of the newspaper as -----, even -----; the runway collection had dazzled the audience.  
(A) unassuming . . audacious  
(B) capricious . . innocuous  
(C) tawdry . . precocious  
(D) vivacious . . insipid  
(E) resplendent . . incandescent
- Robb Armstrong's *Jump Start* fills a void in the cartoon industry, namely, a ----- of comic strips representing African Americans.  
(A) spate (B) revision (C) dearth  
(D) dispersal (E) consensus



Each question below consists of a related pair of words or phrases, followed by five pairs of words or phrases labeled A through E. Select the pair that best expresses a relationship similar to that expressed in the original pair.

**Example:**

CRUMB : BREAD ::

- (A) ounce : unit
- (B) splinter : wood
- (C) water : bucket
- (D) twine : rope
- (E) cream : butter

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

**10. COOKBOOK : RECIPES ::**

- (A) film : reviews
- (B) manual : instructions
- (C) magazine : subscriptions
- (D) paperback : editions
- (E) museum : tours

**11. STONE : SCULPTURE ::**

- (A) mural : painting
- (B) opera : stage
- (C) canvas : easel
- (D) clay : pottery
- (E) plot : novel

**12. LIBERTARIAN : CENSORSHIP ::**

- (A) merchant : profit
- (B) legislator : order
- (C) vegetarian : health
- (D) anarchist : confusion
- (E) pacifist : violence

**13. BRINE : PRESERVATIVE ::**

- (A) grass : fertilizer
- (B) foam : detergent
- (C) fuse : explosive
- (D) grease : lubricant
- (E) germ : antiseptic

**14. OSTENTATION : SIMPLICITY ::**

- (A) stereotype : prejudice
- (B) hypocrisy : sincerity
- (C) hypothesis : experiment
- (D) illusion : allure
- (E) fallacy : appearance

**15. ARBOREAL : TREE ::**

- (A) edible : fruit
- (B) aquatic : water
- (C) humid : desert
- (D) granular : sand
- (E) carnivorous : animal



Each passage below is followed by questions based on its content. Answer the questions on the basis of what is stated or implied in each passage and in any introductory material that may be provided.

**Questions 16-24 are based on the following passage.**

*In this passage, the narrator considers his family's history and migration from Mexico to Texas, which was once part of Mexico.*

I never understood people's fascination with immortality. The idea of life without end gave me chills. Even as a kid, I wanted to be among my family and my ancestors, walking through our short time together. I wanted to bind  
 5 Texas and Mexico together like a raft strong enough to float out onto the ocean of time, with our past trailing in the wake behind us like a comet tail of memories.

But the past can be difficult to conjure again when so little has been left behind. Some families in Mexico have  
 10 troves of their ancestors' belongings, from pottery of the ancients and paintings of Mexico City in the eighteenth century to helmets and shields of the Spaniards. By comparison my family, the Santos, are traveling light through time. Virtually nothing has been handed down, not because  
 15 there was nothing to give, but after leaving Mexico to come to Texas—so many loved ones left behind, cherished places and things abandoned—they ceased to regard anything as a keepsake. Everything was given away. Or they may have secretly clung so closely to treasured objects that  
 20 they never passed them on. Then these objects were lost.

My uncle Lico ferreted out the past as a passionate genealogist who used research, fantasy, and spells of breathless madness to craft his ancestral charts of the branches of our family. Some are elaborate discs, in which  
 25 each outward concentric ring represents a new generation. In others, quickly dashed off as notes to himself, ragged trees and jagged lines are drawn between names like Evaristo, Viviano, Blas, and Hermenegilda. In one, going  
 30 back to 1763, the capstone slot contains the cryptic entry "King of Spain," from whom, presumably, he believed we were descended. Subtle faculties and proclivities were passed, speechlessly, through the flesh of successive generations. The ghosts of Spanish royalty mingled with  
 35 Indians, Black people, and others from every part of the world in Uncle Lico's secret genealogy. Yet, despite the ridicule of many, he managed to recover numerous names and stories. Lico knew I had some of the same magnetic attraction to the past that fueled his manic genealogies, as if the molecules of our bodies were polarized in a way  
 40 that drew us both back in time, back, inexorably, toward the ancestors.

In my dreams, the ancestors who have passed on visit with me in this world. They ask me questions they were once asked: Where did our forbears come from and what

45 have we amounted to in this world? Where have we come to in the span of time, and where are we headed, like an arrow shot long ago into an infinite empty space? What messages and markings of the ancient past do we carry in these handed-down bodies we live in today?

50 With these questions swirling inside me, I have rediscovered some stories of the family past in the landscapes of Texas and Mexico, in the timeless language of stone, river, wind, and trees. My great-uncle Abrán was a master of making charcoal. He lived in the Texas hill country,  
 55 where the cedars needed to make charcoal were planted a century ago. Today, long after he worked there, walking in that central Texas landscape crowded with deep cedar, I feel old Abrán's presence, like the whisper of a tale still waiting to be told, wondering whether my intuition and the  
 60 family's history are implicitly intertwined. Even if everything else had been lost—photographs, stories, rumors, and suspicions—if nothing at all from the past remained for us, the land remains, as the original book of the family. It was always meant to be handed down.

16. The image of the "raft" (line 5) most clearly conveys the narrator's childhood

- (A) wish to escape his circumstances
- (B) desire to merge his family's Texan and Mexican identities
- (C) consideration of leaving Texas and returning to Mexico
- (D) belief that Texas and Mexico are more similar than not
- (E) awareness that he is neither a Texan nor a Mexican

17. The objects mentioned in lines 10-12 ("from pottery . . . Spaniards") are examples of

- (A) artifacts discovered by Uncle Lico
- (B) possessions viewed as impediments to a simple life
- (C) gifts bestowed on departing loved ones
- (D) necessities valued by earlier generations
- (E) items bearing both cultural and personal meaning

18. In line 13, "light" most nearly means

- (A) unencumbered
- (B) illuminated
- (C) nimbly
- (D) faintly
- (E) gently



19. The primary effect of lines 21-35 (“My uncle . . . genealogy”) is to depict the
- (A) collaboration between the narrator and his uncle
  - (B) influence of the uncle on the narrator’s generation
  - (C) unorthodox nature of Uncle Lico’s methodology
  - (D) family’s enthusiasm for Uncle Lico’s research
  - (E) rigors of conducting genealogical investigations
20. The scientific language used in lines 37-41 (“Lico . . . ancestors”) emphasizes the
- (A) forcefulness of a shared fascination
  - (B) chaotic methods used by the narrator’s uncle
  - (C) distillation of information about the narrator’s past
  - (D) place of family systems in the natural world
  - (E) intersection of two separate family lines
21. The narrator indicates that the questions his ancestors pose (lines 43-49) are ones that
- (A) he cannot possibly answer truthfully
  - (B) are meant to forewarn as well as confuse
  - (C) are not really intended to elicit a response
  - (D) contain the answers hidden within themselves
  - (E) have been asked before and will be asked again
22. The characterization of the “bodies” in line 49 underscores the narrator’s preoccupation with
- (A) genealogical method
  - (B) personal destiny
  - (C) family harmony
  - (D) familial identity
  - (E) genetic variability
23. The last paragraph suggests that the narrator has discovered
- (A) a collection of cedar mementos left by his great-uncle
  - (B) a way to remain in touch with his family’s past without keepsakes
  - (C) an area in Texas that reminds him of the home he had left
  - (D) stories that supply direct answers to the questions in his dreams
  - (E) a method of using the land as a valuable source of income
24. The overall tone of the passage is best described as
- (A) analytical
  - (B) whimsical
  - (C) dramatic
  - (D) reflective
  - (E) speculative

**Questions 25-30 are based on the following passage.**

*This passage is excerpted from an essay about the novelist Jane Austen (1775-1817).*

Line  
5  
10  
15  
20  
When I read collections of letters by eminent authors, I am now and then disposed to suspect that the writers had at the back of their minds the notion that one day the letters might find their way into print. When I learn that they had kept copies of their letters, the suspicion is changed into certainty. When André Gide wished to publish his correspondence with Claudel, and Claudel, who perhaps didn't wish it to be published, told him that the letters had been destroyed, Gide answered that it was no matter since he had kept copies of them. Whenever Charles Dickens went on a journey, he wrote long letters to his friends in which he eloquently described the sights he had seen, and which, as his first biographer justly observes, might well have been printed without the alteration of a single word. People were more patient in those days. Still, one would have thought it a disappointment to receive a letter from a friend only to find that it provided word pictures of mountains and monuments when you would have been glad to know whether your friend had run across anyone of interest, had been to any interesting parties, and had been able to get you the books you wanted.

25  
30  
Most of the letters of Jane Austen that have survived were written to her sister Cassandra. Many of Austen's warmest admirers have found the letters to be paltry. These people have said they showed that she was cold and unfeeling and that her interests were trivial. I am surprised. The letters are very natural. Austen never imagined that anyone but Cassandra would read them, and she told her sister just the sort of things she knew would interest her. She wrote about what people were wearing, how much she had paid for the flowered muslin she had bought, what acquaintances she had made, what old friends she had met, and what gossip she had heard.

35  
40  
In one of her letters, Austen said, "I have now attained the true art of letter writing, which we are always told is to express on paper exactly what one would say to the same person by word of mouth. I have been talking to you almost as fast as I could the whole of this letter." Of course, she was right. That is the art of letter writing. She attained it with consummate ease. Since she says that her conversation was exactly like her letters, and her letters are full of witty, ironic, and malicious remarks, we can be pretty sure that her conversation was delightful.

25. The "suspicion" mentioned in line 5 refers to
- (A) an uncertainty about how a letter will end
  - (B) a doubt about the literary merit of some authors
  - (C) a skepticism about Austen's letters to her sister
  - (D) a belief about the way a certain group of people behave
  - (E) a feeling about how a particular event will turn out
26. The list in lines 18-21 ("whether . . . wanted") provides examples of
- (A) individual insight
  - (B) personal information
  - (C) embarrassing revelations
  - (D) eloquent musings
  - (E) dramatic statements
27. The author of the passage discusses Jane Austen (lines 22-43) primarily in order to
- (A) compare the novels of Austen to those of Dickens and Gide
  - (B) contrast letters written by ordinary people with those written by celebrities
  - (C) explain why letters written by eminent authors are usually interesting to read
  - (D) emphasize the distinctive style of Austen's novels
  - (E) champion a particular kind of letter writing
28. The "people" mentioned in line 25 would probably consider the subjects listed in lines 30-33 ("what . . . heard") to be
- (A) representative of Austen's artistry
  - (B) worthy of more detailed investigation
  - (C) witty and ironic critiques
  - (D) interesting only to academic specialists
  - (E) boring and mundane matters



29. The author of the passage demonstrates which attitude toward the “malicious remarks” (line 42) ?
- (A) Appreciation
  - (B) Curiosity
  - (C) Puzzlement
  - (D) Regret
  - (E) Cynicism
30. The author of the passage suggests that an important difference between the letters of Gide and Dickens and the letters of Austen is the
- (A) ultimate intended audience of the letters
  - (B) era during which the letters were written
  - (C) gender and nationality of the letter writers
  - (D) number of surviving letters by each author
  - (E) influence of the letters on each author’s novels

**S T O P**

If you finish before time is called, you may check your work on this section only.  
Do not turn to any other section in the test.



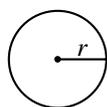
**SECTION 6**  
Time — 15 minutes  
10 Questions

**Directions:** 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.

**Notes:**

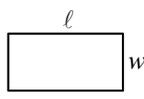
- The use of a calculator is permitted. All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.

Reference Information

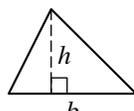


$$A = \pi r^2$$

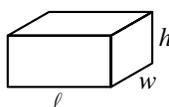
$$C = 2\pi r$$



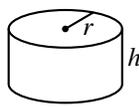
$$A = \ell w$$



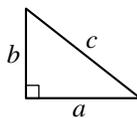
$$A = \frac{1}{2}bh$$



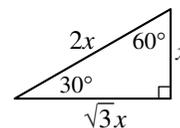
$$V = \ell wh$$



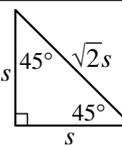
$$V = \pi r^2 h$$



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



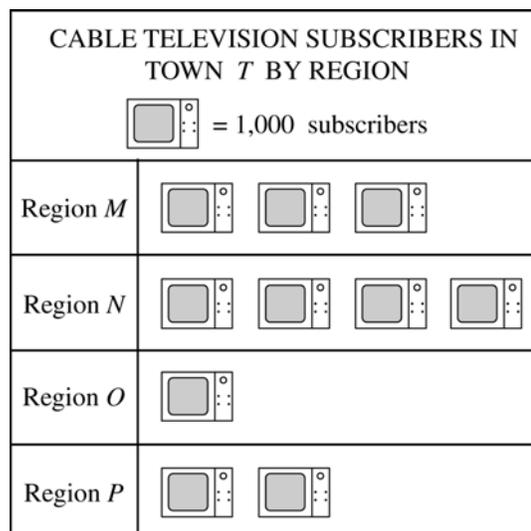
Special Right Triangles



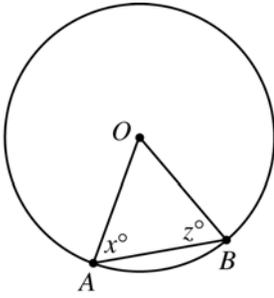
The number of degrees of arc in a circle is 360.  
The measure in degrees of a straight angle is 180.  
The sum of the measures in degrees of the angles of a triangle is 180.

1. Which of the following numbers is between 0 and 1 ?

- (A)  $\frac{10}{5}$   
(B)  $\frac{9}{4}$   
(C)  $\frac{8}{3}$   
(D)  $\frac{7}{9}$   
(E)  $\frac{6}{5}$



2. If the four regions shown in the graph above are the only regions in Town *T*, the total of which two regions accounts for exactly 70 percent of all cable television subscribers in Town *T* ?
- (A) Regions *M* and *N*  
(B) Regions *M* and *O*  
(C) Regions *N* and *O*  
(D) Regions *N* and *P*  
(E) Regions *O* and *P*



Note: Figure not drawn to scale.

3. In the figure above, points  $A$  and  $B$  lie on the circle with center  $O$ . If  $x = 80$ , what is the value of  $z$ ?

(A) 80  
(B) 60  
(C) 50  
(D) 40  
(E) 10

4. If  $x = -2$  and  $y = -3$ , what is the value of  $x^2(x - y)$ ?

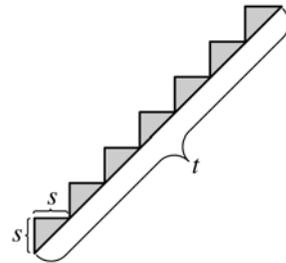
(A)  $-20$   
(B)  $-4$   
(C)  $4$   
(D)  $8$   
(E)  $20$

5. In a certain game, each of 5 players received a score between 0 and 100, inclusive. If their average (arithmetic mean) score was 80, what is the greatest possible number of the 5 players who could have received a score of 50?

(A) None  
(B) One  
(C) Two  
(D) Three  
(E) Four

6. A certain fraction is equivalent to  $\frac{1}{2}$ . If 3 is added to its numerator and 2 is added to its denominator, the resulting fraction is equivalent to  $\frac{3}{4}$ . What is the numerator of the original fraction?

(A) 2  
(B) 3  
(C) 4  
(D) 5  
(E) 6

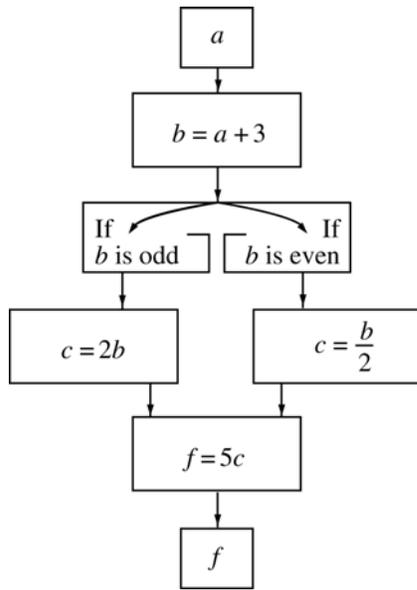


7. On the staircase shown above, both the depth and the height of each step are  $s$ , and each step forms a right angle. What is the value of  $t$  in terms of  $s$ ?

(A)  $10s$   
(B)  $14s$   
(C)  $7s\sqrt{2}$   
(D)  $7s\sqrt{3}$   
(E)  $2s^2$

8. What is the least positive integer that is the product of 3 different prime numbers greater than 2?

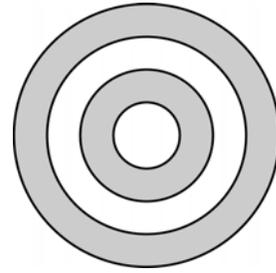
(A) 27  
(B) 45  
(C) 63  
(D) 75  
(E) 105



9. A person selects a value for  $a$  and then follows the steps shown in the diagram above to result in a value of  $f$ . Which of the following statements must be true for all positive integer values of  $a$ ?

- I.  $f$  is even.
- II.  $f$  has 5 as a factor.
- III.  $b < c < f$

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



10. In the figure above, the four circles have the same center and their radii are 1, 2, 3, and 4, respectively. What is the ratio of the area of the small shaded ring to the area of the large shaded ring?

- (A) 1:2
- (B) 1:4
- (C) 3:5
- (D) 3:7
- (E) 5:7

**STOP**

If you finish before time is called, you may check your work on this section only.  
Do not turn to any other section in the test.

**NO TEST MATERIAL ON THIS PAGE**

**SECTION 7****Time — 15 minutes****13 Questions**

**Directions:** For each question in this section, select the best answer from among the choices given and fill in the corresponding oval on the answer sheet.

The two passages below are followed by questions based on their content and on the relationship between the two passages. Answer the questions on the basis of what is stated or implied in the passages and in any introductory material that may be provided.

**Questions 1-13 are based on the following passages.**

*Passage 1 is adapted from a 1994 report by a major U.S. educational task force. Passage 2 is from a 1999 book written by a consultant on educational issues.*

**Passage 1**

The first three years of life appear to be a crucial starting point—a period particularly sensitive to the protective mechanisms of parental and family support. For millennia, parents have recognized the newborn’s basic need for safety, nourishment, warmth, and nurturing. Now science has added stunning revelations about human development from birth to age three, confirming that parents and other adult caregivers play a critical role in influencing the child’s development. The importance of the first three years of life lies in the pace at which the child is growing and learning. In no other period do such profound changes occur so rapidly: the newborn grows from a completely dependent human being into one who walks, talks, plays, and explores. Babies raised by caring, attentive adults in safe, predictable environments are better learners than those raised with less attention in less secure settings.

Unfortunately, in contrast to all the other leading industrialized nations, the United States fails to give parents time to be with their newborns, it fails to ensure pre- and postnatal health care for mothers and infants, and it fails to provide adequate child care. The result is significant losses in the quality of its future workforce, citizenry, and parents. There are, of course, reasons other than economic ones for protecting young children and their families. Children need to be treasured for their own sake, not merely for what they do for the labor market when they are grown. But the issues of “human capital”—the combined skills, knowledge, and ideas of a nation’s people—are real.

America’s business and political leaders are understandably worried about the nation’s children and its educational system. Their concern is well founded, but school reform alone is not the answer. Any effort to strengthen the workforce must begin with the family,

a key factor in the development of human capital. By supporting families during the child’s earliest years, society ensures that children will enter school ready to learn and will be ready, in time, to enter the workforce and be good parents. It is time to sound—and answer—the alarm about the neglect of our nation’s young children and their families. All Americans must take responsibility for reversing this trend. As the risks to our children intensify, so must our determination to enact family-centered programs and policies to ensure all of our youngest children the decent start that they deserve.

**Passage 2**

Much early childhood literature suggests that the first three years of life is the critical period for brain development. It’s a time when the young brain’s learning power is almost limitless. After this period, as child psychiatrist Felton Earls remarks, “A kind of irreversibility sets in. There is this shaping process that goes on early, and then at the end of this process, you have essentially designed a brain that probably is not going to change very much more.” Neuroscientists see it a little differently. In a review of child development and neuroscience issues, Charles Nelson and Floyd Bloom discuss some genuinely new findings in neuroscience—what happens in the brain when adults learn new motor skills and the rapidity with which the adult brain can reorganize after loss of sensory input from an amputated limb. The new findings that Nelson and Bloom allude to suggest that the brain retains its ability to reorganize itself in response to experience or injury throughout life. They conclude, “It may be useful to question the simplistic view that the brain becomes unbendable and increasingly difficult to modify beyond the first few years of life. Although clearly much of brain development occurs through the first years of life, the brain is far from set in its trajectory, even at the completion of adolescence.” If so, we should be wary of claims that parents have only a single, biologically delimited, once-in-a-lifetime opportunity to help their children build better brains.

75 Some might ask why we should care about the scientific  
accuracy of a view put forth by those who want to help  
children: isn't any argument leading to improved opportu-  
nities and outcomes for children a good argument? Many  
well-intentioned early childhood advocates *do* take this  
80 position. It's the hard-nosed but often realistic view that  
everyone knows that policy arguments are merely exercises  
in political rhetoric. Helping society's children is a worthy  
aim. But if we want to take the science seriously, then we  
have to care if we are acting on a science-based agenda  
or a myth. What a science-based policy argument should  
85 do is add some evidence, beyond our own prejudices and  
ideological tastes, for what the preferable policy might be.  
What the science can add to the policy debate are insights  
about leverage points that we could most effectively exploit  
to reach our goal. If the science is wrong, then we are  
90 trying to achieve our policy goals by pushing the wrong  
buttons.

1. The first sentence of Passage 1 (lines 1-3) functions primarily as a
  - (A) statement that its author later undermines
  - (B) foundation for a particular argument
  - (C) facetious paraphrase of a well-known claim
  - (D) disclosure of a personal bias
  - (E) celebration of early childhood
2. Lines 3-9 ("For millennia . . . development") draw a parallel between
  - (A) traditional practices and contemporary critiques
  - (B) basic human needs and intellectual endeavors
  - (C) widespread beliefs and scientific findings
  - (D) parental anxieties and developmental advances
  - (E) experimental hypotheses and proven theories
3. In the second paragraph of Passage 1 (lines 17-29), the author implies that the
  - (A) future workforce of other major industrialized countries will be better prepared than that of the United States
  - (B) United States Congress is unlikely to legislate a mandate for parental leave from work
  - (C) health care issues affecting the United States have not yet been addressed by other nations
  - (D) long-term economic effects of deficient child care are insignificant when compared to each child's individual comfort
  - (E) political agenda of policymakers in the United States exaggerates the need to plan for a future workforce
4. The use of quotation marks in lines 27-28 primarily serves to
  - (A) illustrate an inappropriate phrase
  - (B) introduce a note of irony
  - (C) refer to an archaic notion
  - (D) highlight an unusual term
  - (E) challenge an established concept
5. The author of Passage 1 implies that attempting to strengthen the workforce by reinforcing the educational system is
  - (A) necessary but not sufficient
  - (B) pragmatic but not idealistic
  - (C) feasible but not probable
  - (D) possible but not important
  - (E) overwhelming but not impossible
6. The quotation from Felton Earls in lines 51-55 serves primarily to
  - (A) voice an incontrovertible fact
  - (B) challenge an atypical claim
  - (C) rectify an unjust misconception
  - (D) express a widely held point of view
  - (E) support the argument made by the author of Passage 2
7. The author of Passage 2 refers to "Neuroscientists" (line 55) specifically in order to
  - (A) criticize the notion of scientific infallibility
  - (B) cite further evidence in support of Earls' remarks
  - (C) provide a historical overview of an intriguing new field
  - (D) argue against a particular public policy
  - (E) pose a challenge to a common belief
8. In line 69, "set" most nearly means
  - (A) ready to go
  - (B) agreed upon
  - (C) prepared
  - (D) arranged
  - (E) fixed
9. Lines 74-77 ("Some . . . argument?") primarily serve to
  - (A) illustrate an unlikely misunderstanding
  - (B) discourage a possible investigation
  - (C) anticipate a potential objection
  - (D) reveal a conflict of interest
  - (E) reject a scientific claim

10. The author of Passage 2 suggests that the need for “family-centered programs and policies” (line 44) argued for in Passage 1 is
- (A) acute but difficult to satisfy fully
  - (B) pressing but politically sensitive
  - (C) possibly real but scientifically unproven
  - (D) widely recognized but contrary to economic interests
  - (E) often cited but rarely meant sincerely
11. The author of Passage 1 and Nelson and Bloom in Passage 2 all agree that
- (A) adults are able to learn new behaviors rapidly and successfully
  - (B) the human brain is able to withstand a great deal of trauma
  - (C) children are able to acquire motor skills more easily than language skills
  - (D) much brain development takes place during the early years of childhood
  - (E) the brain becomes increasingly difficult to modify after the first three years of life
12. The authors of both passages agree on the merits of
- (A) adults continuing to acquire new skills
  - (B) society supporting children’s development
  - (C) parents learning from as well as teaching their children
  - (D) scientists setting realistic and fiscally responsible goals
  - (E) the United States developing a strong and skilled workforce
13. The author of Passage 2 would most likely characterize the author of Passage 1 as
- (A) logical but arrogant
  - (B) well meaning but inaccurate
  - (C) persuasive but patronizing
  - (D) precise but impersonal
  - (E) well intentioned but abstruse

**S T O P**

**If you finish before time is called, you may check your work on this section only.  
Do not turn to any other section in the test.**

**NO TEST MATERIAL ON THIS PAGE**



# The Scoring Process

Machine-scoring is done in three steps:

- **Scanning.** Your answer sheet is “read” by a scanning machine and the oval you filled in for each question is recorded on a computer tape.
- **Scoring.** The computer compares the oval filled in for each question with the correct response. Each correct answer receives one point; omitted questions do not count toward your score. For each wrong answer to the multiple-choice questions, a fraction of a point is subtracted to correct for random guessing. For questions with five answer choices, one-fourth of a point is subtracted for each wrong response; for questions with four answer choices, one-third of a point is subtracted for each wrong response. The SAT I verbal test has 78 questions with five answer choices each. If, for example, a student has 44 right, 32 wrong, and 2 omitted, the resulting raw score is determined as follows:

$$44 \text{ right} - \frac{32 \text{ wrong}}{4} = 44 - 8 = 36 \text{ raw score points}$$

Obtaining raw scores frequently involves the rounding of fractional numbers to the nearest whole number. For example, a raw score of 36.25 is rounded to 36, the nearest whole number. A raw score of 36.50 is rounded upward to 37.

- **Converting to reported scaled score.** Raw test scores are then placed on the College Board scale of 200 to 800 through a process that adjusts scores to account for minor differences in difficulty among different editions of the test. This process, known as equating, is performed so that a student’s reported score is not affected by the edition of the test taken or by the abilities of the group with whom the student takes the test. As a result of placing SAT I scores on the College Board scale, scores earned by students at different times can be compared. For example, an SAT I verbal score of 400 on a test taken at one administration indicates the same level of developed verbal ability as a 400 score obtained on a different edition of the test taken at another time.

## How to Score the Test

### SAT I Verbal Sections 1, 4, and 7

**Step A:** Count the number of correct answers for *Section 1* and record the number in the space provided on the worksheet on the next page. Then do the same for the incorrect answers. (Do not count omitted answers.) To determine subtotal A, use the formula:

$$\text{number correct} - \frac{\text{number incorrect}}{4} = \text{subtotal A}$$

**Step B:** Count the number of correct answers and the number of incorrect answers for *Section 4* and record the numbers in the spaces provided on the worksheet. To determine subtotal B, use the formula:

$$\text{number correct} - \frac{\text{number incorrect}}{4} = \text{subtotal B}$$

**Step C:** Count the number of correct answers and the number of incorrect answers for *Section 7* and record the numbers in the spaces provided on the worksheet. To determine subtotal C, use the formula:

$$\text{number correct} - \frac{\text{number incorrect}}{4} = \text{subtotal C}$$

**Step D:** To obtain D, add subtotal A, subtotal B, and subtotal C, keeping any decimals. Enter the resulting figure on the worksheet.

**Step E:** To obtain E, your raw verbal score, round D to the nearest whole number. (For example, any number from 44.50 to 45.49 rounds to 45.) Enter the resulting figure on the worksheet.

**Step F:** To find your SAT I verbal score, use the conversion table on page 42 to look up the total raw verbal score you obtained in step E. Enter this figure on the worksheet.

### SAT I Mathematical Sections 2, 3, and 6

**Step A:** Count the number of correct answers and the number of incorrect answers for *Section 2* and record the numbers in the spaces provided on the worksheet. To determine subtotal A, use the formula:

$$\text{number correct} - \frac{\text{number incorrect}}{4} = \text{subtotal A}$$

**Step B:** Count the number of correct answers and the number of incorrect answers for the *four-choice quantitative comparison questions (questions 1 through 15) in Section 3* and record the numbers in the spaces provided on the worksheet.

**Note:** Do not count any E responses to questions 1 through 15 as correct or incorrect. Because these four-choice questions have no E answer choices, E responses to these questions are treated as omits. To determine subtotal B, use the formula:

$$\text{number correct} - \frac{\text{number incorrect}}{3} = \text{subtotal B}$$

**Step C:** Count the number of correct answers for the student-produced response questions (*questions 16 through 25*) in *Section 3* and record the number in the space provided on the worksheet. This is subtotal C.

**Step D:** Count the number of correct answers and the number of incorrect answers for *Section 6* and record the numbers in the spaces provided on the worksheet. To determine subtotal D, use the formula:

$$\text{number correct} - \frac{\text{number incorrect}}{4} = \text{subtotal D}$$

**Step E:** To obtain E, add subtotal A, subtotal B, subtotal C, and subtotal D, keeping any decimals. Enter the resulting figure on the worksheet.

**Step F:** To obtain F, your raw mathematical score, round E to the nearest whole number. (For example, any number from 44.50 to 45.49 rounds to 45.) Enter the resulting figure on the worksheet.

**Step G:** To find your SAT I mathematical score, use the conversion table on page 42 to look up the total raw mathematical score you obtained in step F. Enter this figure on the worksheet.

# SAT I Scoring Worksheet

## SAT I Verbal Sections

A. Section 1:	$\frac{\text{no. correct}}{\text{no. correct}} - \left( \frac{\text{no. incorrect}}{\text{no. incorrect}} \div 4 \right) =$	$\frac{\text{subtotal A}}{\text{subtotal A}}$
B. Section 4:	$\frac{\text{no. correct}}{\text{no. correct}} - \left( \frac{\text{no. incorrect}}{\text{no. incorrect}} \div 4 \right) =$	$\frac{\text{subtotal B}}{\text{subtotal B}}$
C. Section 7:	$\frac{\text{no. correct}}{\text{no. correct}} - \left( \frac{\text{no. incorrect}}{\text{no. incorrect}} \div 4 \right) =$	$\frac{\text{subtotal C}}{\text{subtotal C}}$
D. Total unrounded raw score (Total A + B + C)		$\frac{\text{D}}{\text{D}}$
E. Total rounded raw score (Rounded to nearest whole number)		$\frac{\text{E}}{\text{E}}$
F. SAT I verbal reported scaled score (See the conversion table.)		<div style="border: 1px solid black; width: 100px; height: 30px; margin: 0 auto;"></div> <p style="text-align: center;">SAT I verbal score</p>

## SAT I Mathematical Sections

A. Section 2:	$\frac{\text{no. correct}}{\text{no. correct}} - \left( \frac{\text{no. incorrect}}{\text{no. incorrect}} \div 4 \right) =$	$\frac{\text{subtotal A}}{\text{subtotal A}}$
B. Section 3: Questions 1-15 (quantitative comparison)	$\frac{\text{no. correct}}{\text{no. correct}} - \left( \frac{\text{no. incorrect}}{\text{no. incorrect}} \div 3 \right) =$	$\frac{\text{subtotal B}}{\text{subtotal B}}$
C. Section 3: Questions 16-25 (student-produced response)	$\frac{\text{no. correct}}{\text{no. correct}} =$	$\frac{\text{subtotal C}}{\text{subtotal C}}$
D. Section 6:	$\frac{\text{no. correct}}{\text{no. correct}} - \left( \frac{\text{no. incorrect}}{\text{no. incorrect}} \div 4 \right) =$	$\frac{\text{subtotal D}}{\text{subtotal D}}$
E. Total unrounded raw score (Total A + B + C + D)		$\frac{\text{E}}{\text{E}}$
F. Total rounded raw score (Rounded to nearest whole number)		$\frac{\text{F}}{\text{F}}$
G. SAT I mathematical reported scaled score (See the conversion table.)		<div style="border: 1px solid black; width: 100px; height: 30px; margin: 0 auto;"></div> <p style="text-align: center;">SAT I mathematical score</p>

# SAT I Score Conversion Table

## Recentered Scale, Saturday, May 2002

Raw Score	Verbal Scaled Score	Math Scaled Score	Raw Score	Verbal Scaled Score	Math Scaled Score
78	800		37	510	560
77	800		36	510	550
76	800		35	500	540
75	790		34	500	540
74	770		33	490	530
73	760		32	490	520
72	750		31	480	510
71	730		30	470	510
70	720		29	470	500
69	710		28	460	490
68	700		27	460	490
67	690		26	450	480
66	690		25	440	470
65	680		24	440	470
64	670		23	430	460
63	660		22	430	450
62	660		21	420	440
61	650		20	410	440
60	640	800	19	410	430
59	640	800	18	400	420
58	630	770	17	390	420
57	620	750	16	380	410
56	620	730	15	380	400
55	610	720	14	370	390
54	610	710	13	360	390
53	600	690	12	350	380
52	600	680	11	340	370
51	590	670	10	340	360
50	580	660	9	330	350
49	580	660	8	320	340
48	570	650	7	310	330
47	570	640	6	300	320
46	560	630	5	290	310
45	560	620	4	270	290
44	550	610	3	260	280
43	550	600	2	250	260
42	540	600	1	230	250
41	540	590	0	210	230
40	530	580	-1	200	210
39	520	570	-2	200	200
38	520	570	and below		

**This table is for use only with this test.**