



## Taking the SAT<sup>®</sup> I: Reasoning Test

### Practice Test Sections

The materials in these files are intended for individual use by students getting ready to take an SAT Program test; permission for any other use must be sought from the SAT Program. Schools (state-approved and/or accredited diploma-granting secondary schools) may reproduce them, in whole or in part, in limited quantities, for face-to-face guidance/teaching purposes but may not mass distribute the materials, electronically or otherwise. These materials and any copies of them may not be sold, and the copyright notices must be retained as they appear here. This permission does not apply to any third-party copyrights contained herein. No commercial use or further distribution is permitted.

#### The College Board: Expanding College Opportunity

The College Board is a national nonprofit membership association whose mission is to prepare, inspire, and connect students to college success and opportunity. Founded in 1900, the association is composed of more than 4,300 schools, colleges, universities, and other educational organizations. Each year, the College Board serves over three million students and their parents, 23,000 high schools, and 3,500 colleges through major programs and services in college admissions, guidance, assessment, financial aid, enrollment, and teaching and learning. Among its best-known programs are the SAT<sup>®</sup>, the PSAT/NMSQT<sup>®</sup>, and the Advanced Placement Program<sup>®</sup> (AP<sup>®</sup>). The College Board is committed to the principles of excellence and equity, and that commitment is embodied in all of its programs, services, activities, and concerns.

For further information, visit [www.collegeboard.com](http://www.collegeboard.com).

Copyright 2003 by College Entrance Examination Board. All rights reserved. College Board, Advanced Placement Program, AP, One-on-One with the SAT, SAT, and the acorn logo are registered trademarks of the College Entrance Examination Board. ELPT and English Language Proficiency Test are trademarks owned by the College Entrance Examination Board. PSAT/NMSQT is a registered trademark of the College Entrance Examination Board and the National Merit Scholarship Corporation. SAT PrepPacks is a trademark owned by collegeboard.com. Other products and services mentioned herein may be trademarks of their respective owners. This publication was prepared and produced by Educational Testing Service (ETS), which develops and administers SAT Program tests for the College Board. The College Board and Educational Testing Service are dedicated to the principle of equal opportunity, and their programs, services, and employment policies are guided by that principle.

# Practice Test

SAT I: Reasoning Test

## About the Practice Test

Take the practice test, which starts on page 35, to reinforce your test-taking skills and to be more comfortable when you take the SAT. This practice test will give you a good idea of what to expect on the actual test. However, the test you eventually take will differ in some ways. It may, for example, contain a different number of reading passages, and its sections may be in a different order. Although some editions of the SAT may be slightly easier or harder than others, statistical adjustments are made to ensure that each score indicates the same level of performance.

Also, this practice SAT includes only six of the seven sections that the actual test contains. Section 5 has been omitted on this test because it contains questions that may be used in future editions of the SAT and because it does not count toward the scores.

The practice test will help you most if you take it under conditions as close as possible to those of the actual test.

### FINDING YOUR SCORES

Your raw test scores are placed on the College Board scale of 200 to 800. Use the table on page 63 to find the scaled scores that correspond to your raw scores on this edition of the SAT.

### REVIEWING YOUR PERFORMANCE

After you score your practice test, analyze your performance. Asking yourself these questions and following the suggestions can help you improve your scores:

- **Did you run out of time before you finished a section?** Try to pace yourself so you will have time to answer all the questions you can. Don't spend too much time on any one question.
- **Did you hurry and make careless mistakes?** You may have misread the question, neglected to notice the word "except" or "best," solved for the wrong value, or reversed column A and column B in your mind.
- **Were there questions you omitted that you might have gotten right if you had guessed? Did you lose points because of random guessing?** Read page 4 again to determine when guessing might be helpful.
- **Did you spend too much time reading directions?** You should be familiar with the test directions so you don't have to spend as much time reading them when you take the actual test.

### MORE ABOUT SCORING

Your SAT answer sheet is scanned by machine and the oval you filled in for each question is recorded on a computer tape. Next, the computer compares the oval filled in for each question with the correct response.

## Practice Test Tips

**1. Set aside 2½ hours of uninterrupted time.** That way you can complete the entire test at one sitting.

**2. Sit at a desk or table cleared of any other papers or books.** You won't be able to take a dictionary, books, or notes into the test room.

**3. Allow yourself the specified amount of time for each section.** Have a timer or clock in front of you for pacing yourself on the sections.

**4. Have a calculator at hand when you take the math sections.** This will help you determine how much to use a calculator the day of the test.

**5. Read the instructions on page 35.** They are reprinted from the back cover of the test book. On test day, you will be asked to read them before you begin answering questions.

**6. After you finish, read page 63.**

**1. Your Name**

Last Name (First 4 Letters)				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 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)
(1)	(1)	(1)	(1)	(1)	(1)
(2)	(2)	(2)	(2)	(2)	(2)
(3)	(3)	(3)	(3)	(3)	(3)
(4)	(4)	(4)	(4)	(4)	(4)
(5)	(5)	(5)	(5)	(5)	(5)
(6)	(6)	(6)	(6)	(6)	(6)
(7)	(7)	(7)	(7)	(7)	(7)
(8)	(8)	(8)	(8)	(8)	(8)
(9)	(9)	(9)	(9)	(9)	(9)

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

(0)	(0)	(0)	(0)	(0)	(0)
(1)	(1)	(1)	(1)	(1)	(1)
(2)	(2)	(2)	(2)	(2)	(2)
(3)	(3)	(3)	(3)	(3)	(3)
(4)	(4)	(4)	(4)	(4)	(4)
(5)	(5)	(5)	(5)	(5)	(5)
(6)	(6)	(6)	(6)	(6)	(6)
(7)	(7)	(7)	(7)	(7)	(7)
(8)	(8)	(8)	(8)	(8)	(8)
(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)

**CAUTION** If section 3 is a math section that does not contain 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
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

17 

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

18 

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

19 

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

20 

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

21 

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

22 

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

23 

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

24 

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

25 

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

ERASE ANY ERRORS OR STRAY MARKS COMPLETELY.

**DO NOT WRITE IN THIS AREA.**

-----

-----

**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.

**SECTION**

**4**

- 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)

**CAUTION** If section 4 is a math section that does not contain 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		17		18		19		20	
21		22		23		24		25	

ERASE ANY ERRORS OR STRAY MARKS COMPLETELY.

**DO NOT WRITE IN THIS AREA.**

-----

-----

**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)

Section 5, the equating section of this practice test, has been omitted.

**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 online at [www.collegeboard.com](http://www.collegeboard.com) and/or in the *Registration Bulletin* and certify that I am the person whose name and address appear on this answer sheet.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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

Special Questions					
1	(A)	(B)	(C)	(D)	(E)
2	(A)	(B)	(C)	(D)	(E)
3	(A)	(B)	(C)	(D)	(E)

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

## SAT<sup>®</sup> 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.

### 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.

**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.

8. Form Code				
D	V	5	4	9
(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
422549

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.**



**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. The doctor does not believe in conservative approaches to teaching medicine: she uses the latest techniques, including ----- ones.  
(A) outmoded    (B) figurative    (C) experimental  
(D) cursory    (E) permanent
2. Cookery ----- the ----- of science, for the observations of prehistoric cooks laid the foundations of early chemistry.  
(A) ignored . . . precision  
(B) advanced . . . development  
(C) retarded . . . supremacy  
(D) aided . . . decline  
(E) betrayed . . . methodology
3. The United States Congress has the power to -----, that is, to charge an elected federal official for a major crime.  
(A) veto    (B) convict    (C) demote  
(D) impeach    (E) exonerate
4. "Bedlam," a popular name for the first English insane asylum, has come to signify any scene of ----- and confusion.  
(A) collaboration    (B) treachery    (C) secrecy  
(D) turmoil    (E) placidity
5. Even though the programmers are ----- about their new software, they are wary of publicly ----- its capabilities until further testing.  
(A) anxious . . . commending  
(B) apprehensive . . . substantiating  
(C) confident . . . disclosing  
(D) positive . . . decrying  
(E) cynical . . . celebrating
6. Mary Ellen Pleasant, as a ----- supporter of Black emancipation before the Civil War, spurned politicians who advocated quiet dissent.  
(A) cavalier    (B) vociferous    (C) sanguine  
(D) premature    (E) noncommittal
7. Although we as laypeople expect scientific accounts of the world to be ----- our commonsense understanding of reality, the paradoxes of modern physics seem to ----- our personal expectations.  
(A) parallel to . . . confirm  
(B) consistent with . . . undermine  
(C) aligned against . . . resist  
(D) congruent with . . . buttress  
(E) implied in . . . augment
8. The play closed after only a week because critics gave the performance ----- reviews.  
(A) innocuous    (B) caustic    (C) rave  
(D) gaudy    (E) contrite
9. The essay was both ----- and ----- : although concise, it was profoundly moving.  
(A) meandering . . . denigrating  
(B) compact . . . enervating  
(C) fictional . . . touching  
(D) argumentative . . . rationalistic  
(E) terse . . . poignant
10. The consequence of the conspirators' ----- was severe punishment of all those involved in the unsuccessful revolt.  
(A) machinations    (B) ruminations  
(C) reservations    (D) forebodings  
(E) consolations

**GO ON TO THE NEXT PAGE**





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)

11. MUSICIAN : ORCHESTRA ::

- (A) worker : product
- (B) composer : score
- (C) soloist : accompanist
- (D) player : team
- (E) dancer : stage

12. EARTHWORM : SOIL ::

- (A) whale : ocean
- (B) salmon : net
- (C) swimmer : pool
- (D) horse : stable
- (E) bird : nest

13. CREVICE : OPENING ::

- (A) well : water
- (B) crack : stress
- (C) slit : cut
- (D) base : summit
- (E) leak : seal

14. PEN : INSCRIBE ::

- (A) copper : polish
- (B) pencil : erase
- (C) telephone : listen
- (D) needle : embroider
- (E) flame : boil

15. GRAZE : SCRAPE ::

- (A) float : sink
- (B) tap : hear
- (C) relieve : injure
- (D) weigh : measure
- (E) dampen : wet

16. ACRE : AREA ::

- (A) horizon : distance
- (B) thermometer : heat
- (C) size : volume
- (D) ounce : weight
- (E) water : fluid

17. EULOGY : TRIBUTE ::

- (A) editorial : opinion
- (B) speech : audience
- (C) book : preface
- (D) poetry : lyrics
- (E) pun : words

18. CONTRACT : AGREEMENT ::

- (A) recipe : menu
- (B) diploma : school
- (C) ticket : theater
- (D) loan : reimbursement
- (E) summons : command

19. CONTRARY : CONFORM ::

- (A) conspiratorial : plot
- (B) indebted : repay
- (C) heretical : expel
- (D) skeptical : believe
- (E) propagandistic : persuade

20. PARAGON : EXCELLENCE ::

- (A) coward : bravery
- (B) aggressor : confidence
- (C) traitor : disloyalty
- (D) buyer : bargain
- (E) orator : attention

21. CACOPHONOUS : SOUND ::

- (A) delicious : taste
- (B) dark : vision
- (C) pungent : odor
- (D) faded : color
- (E) tactile : touch

22. RUTHLESS : COMPASSION ::

- (A) unwitting : awareness
- (B) euphoric : mania
- (C) bitter : resentment
- (D) unknowable : comprehension
- (E) diplomatic : tact

23. NEMESIS : HARM ::

- (A) sycophant : criticism
- (B) apprentice : learning
- (C) prodigy : talent
- (D) muse : inspiration
- (E) commentator : disinterest

GO ON TO THE NEXT PAGE



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 24-35 are based on the following passages.**

The following two passages are from critical commentaries on “the Tramp,” the comic character created by silent-film star Charlie Chaplin (1889-1977).

**Passage 1**

Before Charlie Chaplin came along, tramps and hoboes had long been a part of the cartoon and comic strip tradition, represented most prominently in England in 1896 by Tom Browne’s “Weary Willie and Tired Tim” and in the United States in 1900 by Frederick Burr Opper’s “Happy Hooligan.” But Chaplin was to bring a definitive genius to the tramp figure, raising it to heights of poetic and mythic power in his first year with the Keystone studios. That Chaplin had considered using the tramp figure earlier is suggested by the title of one of his childhood stage teams, “Bristol and Chaplin, the Millionaire Tramps.” But the tramp character was not fully realized until 1914, when Chaplin donned the baggy pants, the floppy shoes, the cane, the derby hat, and the little moustache for his second film. As Chaplin would later explain, “The moment I was dressed, the clothes and makeup made me feel the character. By the time I walked on stage ‘the Tramp’ was fully born.” He would polish and revise the character through other film roles until 1915, when he was featured in his own two-reel film, *The Tramp*.

In his own comments on the Tramp, Chaplin put his finger on many of the elements that made the characterization so powerful and universally relevant. As he said after introducing the character to his director, “this fellow is many-sided, a tramp, a gentleman, a poet, a dreamer, a lonely fellow, always hopeful of romance and adventure. He would have you believe he is a scientist, a musician, a duke, a polo player. However, he is not above picking up cigarette butts or robbing a baby of its candy.” The Tramp, in other words, is a human being down and out on his luck and full of passion for life and hope that things will get better. He is imaginative and creative, and thus a romantic and an artist, who brings style to his meager existence and art to his struggle for survival. Yet when things become worse, he is willing to place practicality above sentiment and violate the usual social amenities. He is indeed complex and many-sided, thereby touching most human beings at one or more points in our character and makeup. There is a good deal in his nature that most of us identify with in our secret selves, apart from what we are in the public world we inhabit.

**Passage 2**

There is no doubt that Charlie Chaplin was a regular reader of the most famous of the early comic strips,

“Weary Willie and Tired Tim.” Weary Willie and Tired Tim made their debut on the front of *Illustrated Chips* in 1896 when Chaplin was an energetic eight year old. In his book, *My Autobiography*, Chaplin only mentions his love of comics in passing, commenting that one of his rare pleasures was reading “my weekly comic on a serene Sunday morning.”

He was much more forthcoming—and revealing—in 1957 while talking to journalist Victor Thompson. Chaplin began reminiscing about his younger days—and one particular occasion when he had a short-lived job at a glass-blowing establishment in London.

“In the lunch breaks, I used to entertain the men with sand dances,” he told Thompson. “On one occasion I danced so furiously, I got sick and had to be sent home. I sat on the curb feeling I was dying. A woman gave me a penny to go home by horse-bus, but I walked and bought a comic with the windfall.

“Ah, those comics,” Chaplin went on, “the wonderfully vulgar paper for boys with ‘Casey Court’ pictures, and the ‘Adventures of Weary Willie and Tired Tim,’ two famous tramps with the world against them. There’s been a lot said about how I evolved the little tramp character who made my name. Deep, psychological stuff has been written about how I meant him to be a symbol of all the class war, of the love-hate concept, the death-wish and what-all.

“But if you want the simple Chaplin truth behind the Chaplin legend, I started the little tramp simply to make people laugh and because those other old tramps, Weary Willie and Tired Tim, had always made me laugh.”

If one glances through old copies of *Illustrated Chips*, it is possible to find similarities between the scrapes that Weary Willie and Tired Tim got into and those in some of Chaplin’s films: even the titles of Chaplin’s early movies seem derived from the adventures of the comic book heroes. And if further proof of the influence is needed, isn’t the very appearance of the gaunt Weary Willie strikingly similar to that of Chaplin’s Little Tramp?

GO ON TO THE NEXT PAGE 



24. In line 8, the phrase “first year” emphasizes how Chaplin
- (A) underwent a dramatic change that surprised everyone
  - (B) accomplished something highly significant in a very short time
  - (C) demanded creative freedom from the start of his career
  - (D) rarely showed allegiance to any film studio for more than one year
  - (E) quickly won over the critics who had panned his first films
25. The comment in lines 28-29 (“However . . . candy”) suggests that the Tramp
- (A) is honorable even when he is down on his luck
  - (B) is willing to violate society’s sense of acceptable behavior
  - (C) can be compassionate one minute and aloof the next
  - (D) tries to exercise restraint but is too passionate to hide his feelings
  - (E) pretends to be oblivious to his surroundings but is a shrewd observer
26. In the concluding sentence of Passage 1, the author suggests that most people
- (A) believe that the Tramp’s blatant disregard for societal norms is a bad influence on the public
  - (B) do not comprehend their own true nature, whereas the Tramp is known for his self-awareness
  - (C) inhabit a world of one-dimensional personalities
  - (D) share an emotional affinity with the Tramp
  - (E) admire the Tramp’s resilience in hard times
27. In Passage 2, the conversation with journalist Victor Thompson proved significant primarily because it
- (A) provided insight into what influenced Chaplin to create the Tramp
  - (B) explained how difficult it was for Chaplin to perfect the role of the Tramp
  - (C) helped Chaplin understand more clearly his own attitudes toward the Tramp
  - (D) gave Chaplin an opportunity to respond to critics of his autobiography
  - (E) covered new ground in compiling a psychological profile of the Tramp
28. How does Chaplin’s comment about comic strips in lines 62-73 (“Ah . . . laugh”) relate to his reaction to comics in lines 47-50 (“In . . . morning”) ?
- (A) It shows that Chaplin told his audiences what he thought they wanted to hear rather than the truth.
  - (B) It suggests that Chaplin was more enthralled with comic strips than he indicated in his autobiography.
  - (C) It refutes the criticism that Chaplin’s humor was not original but was borrowed in large part from early comic-strip tramps.
  - (D) It proves that Chaplin intended his Tramp to be more thought-provoking than the tramps depicted in comic strips.
  - (E) It explains why Chaplin’s attitude toward comic strips changed as he evolved from a young amateur to a mature professional.
29. The last paragraph in Passage 2 functions primarily to
- (A) show how Chaplin’s true character was very different from his public image
  - (B) compare Chaplin’s adoration of comic book heroes with the public’s adoration of Chaplin
  - (C) emphasize how the Tramp character changed over the years
  - (D) foster a greater appreciation for Chaplin’s comic genius
  - (E) provide explicit evidence of what inspired Chaplin
30. According to both passages, the year 1896 was significant because it was then that
- (A) the comic book *Illustrated Chips* became available in the United States
  - (B) theater audiences first saw Chaplin’s interpretation of the Tramp
  - (C) Weary Willie and Tired Tim were introduced to the public
  - (D) Chaplin’s comic genius was first recognized
  - (E) the development of silent film technology got under way

GO ON TO THE NEXT PAGE 



31. How does the reference to what Chaplin “put his finger on” (lines 21-22, Passage 1) differ from the “Chaplin truth” (line 70, Passage 2) ?
- (A) The first implies that Chaplin’s views were widely accepted; the second implies that few people embraced Chaplin’s beliefs.
  - (B) The first addresses Chaplin’s ability to fool people; the second focuses on Chaplin’s ability to persuade them.
  - (C) The first reveals the profound elements of the Tramp; the second suggests that the primary purpose of the Tramp was to provide humor.
  - (D) The first conveys Chaplin’s sense of accomplishment; the second downplays Chaplin’s contributions to the development of the Tramp.
  - (E) The first presents a cynical view of comedy; the second offers a more whimsical outlook.
32. Lines 70-73 in Passage 2 suggest that the interpretation of the Tramp by the author of Passage 1
- (A) misconstrues Chaplin’s fundamental motivation for the Tramp figure
  - (B) wrongly assumes that society embraced Chaplin’s unconventional ideas
  - (C) erroneously credits Weary Willie and Tired Tim with conceiving the idea for the Tramp figure
  - (D) conveys the false impression that the Tramp was the only character that Chaplin played
  - (E) ignores the way in which Chaplin sought to render social commentary through his humor
33. Which statement best describes how each passage addresses the influence of comic strips on Chaplin’s Tramp?
- (A) Passage 1 denies that the early comic strips bear any similarity to Chaplin’s character, while Passage 2 argues for a direct resemblance.
  - (B) Passage 1 argues that comic strips inspired Chaplin, while Passage 2 identifies Chaplin’s silent film colleagues as his chief inspiration.
  - (C) Passage 1 argues that Chaplin had a scholarly interest in the history of comic strip tramps, while Passage 2 argues that he merely found them funny.
  - (D) Passage 1 argues that Chaplin added meaning to his comic strip predecessors, while Passage 2 simply recognizes their comic influence.
  - (E) Passage 1 focuses on Chaplin’s contempt for comic strip humor, while Passage 2 highlights why Chaplin found comic strips entertaining.
34. Compared to the description of Chaplin’s Tramp in Passage 1, the portrayal of the Tramp in Passage 2 is less
- (A) compassionate
  - (B) personal
  - (C) generous
  - (D) complicated
  - (E) humorous
35. According to Passage 2, Chaplin would most probably characterize the concluding sentence of Passage 1 (lines 38-41) as
- (A) “forthcoming—and revealing” (line 51)
  - (B) “wonderfully vulgar” (lines 62-63)
  - (C) “Deep, psychological stuff” (line 67)
  - (D) “the simple Chaplin truth” (line 70)
  - (E) “further proof of the influence” (line 79)

**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 2

Time — 30 minutes

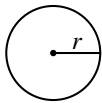
25 Questions

**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:**

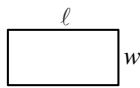
- The use of a calculator is permitted. All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not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

Reference Information

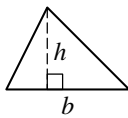


$$A = \pi r^2$$

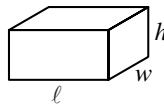
$$C = 2\pi r$$



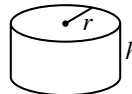
$$A = \ell w$$



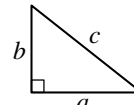
$$A = \frac{1}{2}bh$$



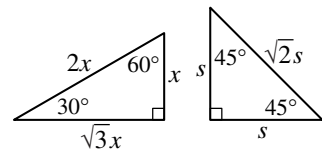
$$V = \ell wh$$



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



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



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.

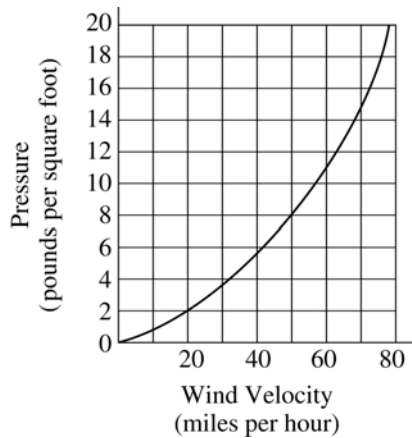
1. If  $5p + m = 7$  and  $m = 7$ , what is the value of  $p$ ?

- (A) 0  
 (B)  $\frac{1}{5}$   
 (C)  $\frac{2}{5}$   
 (D)  $\frac{7}{5}$   
 (E)  $\frac{14}{5}$

2. There are 20 packages of bagels on a shelf in a store and each package contains the same number of bagels. If 3 of these packages contain a total of 18 bagels, how many bagels are there in 7 of these packages?

- (A) 21  
 (B) 36  
 (C) 40  
 (D) 42  
 (E) 49

GO ON TO THE NEXT PAGE



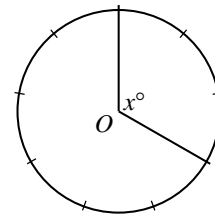
3. According to the graph above, when the wind velocity is 70 miles per hour, which of the following is closest to the pressure, in pounds per square foot?
- (A) 13.5  
(B) 14.0  
(C) 15.0  
(D) 16.0  
(E) 16.5

4. In the number 0.257, which of the following does the digit 7 represent?

- (A)  $7 \times \frac{1}{10}$   
(B)  $7 \times \frac{1}{100}$   
(C)  $7 \times \frac{1}{1,000}$   
(D)  $7 \times \frac{1}{10,000}$   
(E)  $7 \times \frac{1}{100,000}$

5. If  $xyz = z$  and the value of  $x$  is 0, which of the following must be true?

- (A)  $y = 0$   
(B)  $z = 0$   
(C)  $xy = 1$   
(D)  $y = 1$   
(E)  $z = 1$



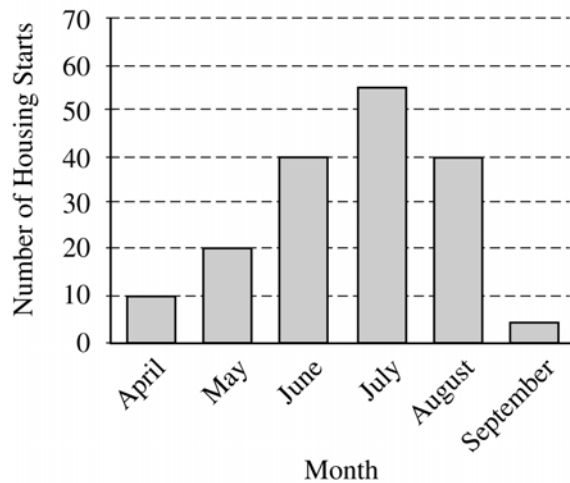
6. The circle above has center  $O$  and is divided into 9 equal arcs. What is the value of  $x$ ?

- (A) 110  
(B) 118  
(C) 120  
(D) 124  
(E) 125

GO ON TO THE NEXT PAGE

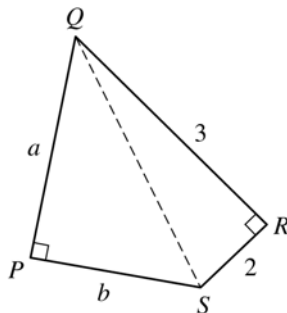


HOUSING STARTS BY THE  
XYZ CONSTRUCTION COMPANY



7. The bar graph above shows the number of houses started by the XYZ Construction Company over a 6-month period. For which of the following months was there the greatest increase over the previous month in the number of housing starts?

- (A) May  
(B) June  
(C) July  
(D) August  
(E) September



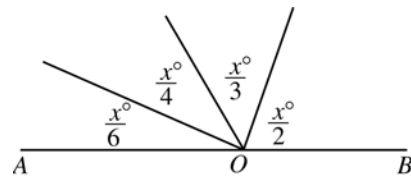
Note: Figure not drawn to scale.

8. In quadrilateral  $PQRS$  above, what is the value of  $a^2 + b^2$ ?

- (A) 8  
(B) 10  
(C) 11  
(D) 12  
(E) 13

9. The price of a certain type of cherry can range from \$2.50 to \$3.00 per pound, and the price of a certain type of roll can range from \$0.80 to \$1.10 per dozen. To be sure of having enough money to buy  $c$  pounds of these cherries and  $r$  dozen of these rolls, a person needs at least how many dollars, in terms of  $c$  and  $r$ ?

- (A)  $\frac{c+r}{3+1.1}$   
(B)  $\frac{c}{3} + \frac{r}{1.1}$   
(C)  $2.5c + 0.8r$   
(D)  $3c + 1.1r$   
(E)  $(3+1.1)(c+r)$



Note: Figure not drawn to scale.

10. In the figure above, point  $O$  lies on line  $AB$ . What is the value of  $x$ ?

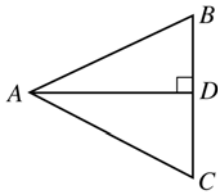
- (A) 90  
(B) 120  
(C) 144  
(D) 156  
(E) 168

GO ON TO THE NEXT PAGE



11. If  $s = a + 2$  and  $t = a - 2$ , which of the following represents the product of  $s$  and  $t$  for every number  $a$ ?

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



Note: Figure not drawn to scale.

12. In  $\triangle ABC$  above, the bisector of  $\angle BAC$  is perpendicular to  $BC$  at point  $D$ . If  $AB = 6$  and  $BD = 3$ , what is the measure of  $\angle BAC$ ?

(A)  $15^\circ$   
 (B)  $30^\circ$   
 (C)  $45^\circ$   
 (D)  $60^\circ$   
 (E)  $75^\circ$

13. In January the price of a certain item was \$120. In February the price increased by 10 percent. During a sale in March, the February price was discounted by 10 percent. What was the price of the item during the sale in March?

(A) \$106.80  
 (B) \$118.80  
 (C) \$120.00  
 (D) \$121.20  
 (E) \$132.00

14. Line  $\ell$ , line  $m$ , and point  $P$  lie in a plane such that  $\ell \parallel m$  and  $P$  is between  $\ell$  and  $m$ . If line  $t$  in the same plane passes through point  $P$ , which of the following could be true?

I.  $t$  intersects  $\ell$  but not  $m$ .  
 II.  $t$  intersects both  $\ell$  and  $m$ .  
 III.  $t$  does not intersect either  $\ell$  or  $m$ .

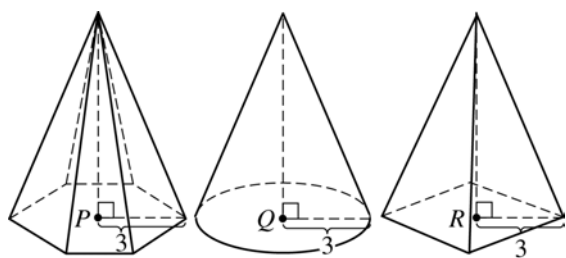
(A) I only  
 (B) II only  
 (C) III only  
 (D) I and II  
 (E) II and III

15. If  $x$  is positive and  $\frac{\sqrt{x}}{\sqrt{5}} = \frac{\sqrt{5}}{\sqrt{x}}$ , then  $x =$

(A) 0  
 (B) 1  
 (C)  $\sqrt{5}$   
 (D) 5  
 (E) 25

GO ON TO THE NEXT PAGE





Solid I

Solid II

Solid III

16. The height of each solid shown above is 7. The base of solid I has 6 sides of equal length, 6 angles of equal measure, and center  $P$ . The base of solid II is a circle with center  $Q$ . The base of solid III is a square with center  $R$ . Which of the following is true?

- (A) Solid I has the greatest volume.  
 (B) Solid II has the greatest volume.  
 (C) Solid III has the greatest volume.  
 (D) The volumes of solids I and II are equal.  
 (E) The volumes of solids II and III are equal.

---


$$x^3 \geq x^2 \text{ for all positive numbers } x.$$

17. Which of the following values for  $x$  shows that the statement above is false?

- (A)  $-1$   
 (B)  $0$   
 (C)  $\frac{1}{2}$   
 (D)  $1$   
 (E)  $2$

18. The school nurse at Pine Street High School surveyed the heights of all of the female students at the school. The median of the heights was 165 centimeters and the mode was 162 centimeters. Which of the following statements must be true?

- (A) The height of half of the female students is 165 centimeters.  
 (B) The most frequently occurring height of the female students is 162 centimeters.  
 (C) The average (arithmetic mean) of the heights of the female students is 163.5 centimeters.  
 (D) More female students are 165 centimeters tall than 162 centimeters tall.  
 (E) More female students are shorter than 165 centimeters than are taller than 165 centimeters.

- 
19. If  $5n + p = 3$  and  $2m - 10n = 2$ , what is the value of  $m + p$ ?

- (A) 2  
 (B) 4  
 (C) 5  
 (D) 7  
 (E) 8

- 
20. If  $2^x = y$ , which of the following must be equal to  $2^{x+1}$ ?

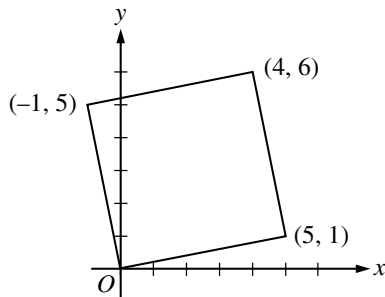
- (A)  $y + 1$   
 (B)  $y + 2$   
 (C)  $2y$   
 (D)  $4y$   
 (E)  $\frac{y^2}{2}$

GO ON TO THE NEXT PAGE



21. If  $x$  is 5 percent of  $r$  and  $r$  is 20 percent of  $s$ , what percent of  $s$  is  $x$ ?

- (A) 1%
- (B) 4%
- (C) 10%
- (D) 40%
- (E) 100%



22. What is the area of the square shown above?

- (A) 5
- (B) 6
- (C) 20
- (D) 25
- (E) 26

23. For all values of  $a$ , let  $\langle a \rangle$  be defined as  $\langle a \rangle = 4a - 4$ . Which of the following equals  $\langle 6 \rangle - \langle 5 \rangle$ ?

- (A)  $\langle 2 \rangle$
- (B)  $\langle 3 \rangle$
- (C)  $\langle 4 \rangle$
- (D)  $\langle 5 \rangle$
- (E)  $\langle 6 \rangle$

24. The average (arithmetic mean) of three different positive integers is 12. If the first of these integers is 9 times the second integer, what is the least possible value of the third integer?

- (A) 6
- (B) 4
- (C) 3
- (D) 2
- (E) 1

25. If  $n$  is a positive integer, which of the following CANNOT be the units digit of  $3^n$ ?

- (A) 1
- (B) 3
- (C) 5
- (D) 7
- (E) 9

**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

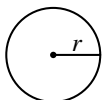
25 Questions

**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:**

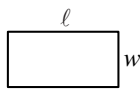
- The use of a calculator is permitted. All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not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

Reference Information

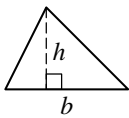


$$A = \pi r^2$$

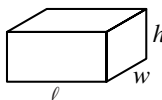
$$C = 2\pi r$$



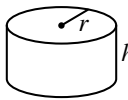
$$A = \ell w$$



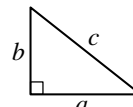
$$A = \frac{1}{2}bh$$



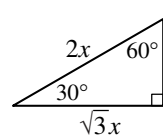
$$V = \ell wh$$



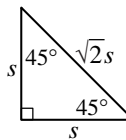
$$V = \pi r^2 h$$



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



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

5<sup>2</sup>

20

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

E2

 $x$ 

30

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

E3

 $r + 1$  $s - 1$ 
 (A)  (B)  (C)  (D)  (E)

## 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

$$x = 0$$

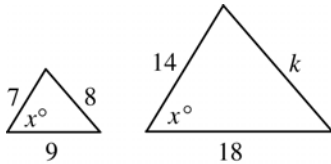
1.

$$\frac{x+1}{x-1}$$

$$0$$

Set  $S$  consists of all integers from  $-50$  to  $0$ , inclusive. Set  $T$  consists of all integers from  $0$  to  $50$ , inclusive.

2.

The number of integers in set  $S$ The number of integers in set  $T$ 

3.

$$k$$

$$16$$

The sum of  $k$  and  $7$  equals the sum of  $m$  and  $8$ .

4.

$$k$$

$$m$$

Column A

Column B

$m$  and  $p$  are 3-digit integers greater than  $100$ .  
The tens digit of  $m$  is  $5$ .  
The tens digit of  $p$  is  $7$ .

5.

$$m$$

$$p$$

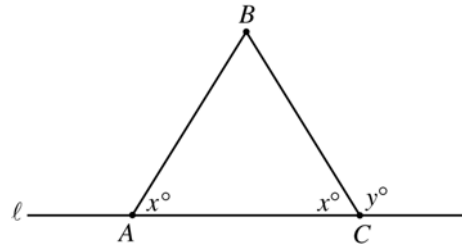
$$a > 0$$

$$\frac{a}{b} = 3$$

6.

$$a$$

$$b$$



7.

$$y$$

$$180 - 2x$$

$R$ ,  $S$ , and  $T$  are nonzero digits of the positive decimal numerals  $RS.T$  and  $0.0RST$

8.

$$\frac{10 \times RS.T}{10,000}$$

$$0.0RST$$

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

$x$ ,  $y$ , and  $z$  are consecutive prime numbers in increasing order, and  $x = 2$ .

9.

$$\frac{1}{x} + \frac{1}{y} + \frac{1}{z}$$

1

The volume of a sphere with radius  $r$  is equal to  $\frac{4}{3}\pi r^3$ .

10.

The volume of a sphere with radius 6

The total volume of two spheres, each with radius 3

When tossed in the air, a coin is equally as likely to land with heads up as it is with tails up. The coin is to be tossed twice.

11.

The probability that the coin will land heads up both times

The probability that the coin will land heads up on the first toss and tails up on the second toss

For all positive numbers  $n$  and  $k$ , let  $n \square k$  be defined by  $n \square k = (n - k)k$ .

$$0 < r < s$$

12.

$$r \square s$$

$$s \square r$$

Column A

Column B

13.

$$a(b - c) + f$$

$$ab - c + f$$

Eight different chemical elements make up more than 99 percent of Earth's crust.

14.

The percent of Earth's crust made up of all chemical elements other than those eight

1 percent

15.

The area of a rectangle with perimeter 40

The area of a rectangle with perimeter 60

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

← Fraction line

Grid in result. →

Answer: 2.5

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

← Decimal point

Answer: 201  
Either position is correct.

2	0	1	
•	•	•	•
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4

2	0	1	
•	•	•	•
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4

**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 

2	1	/	2
•	•	•	•

 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 |   |
| • | • | • | • |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
- |   |   |   |   |
|---|---|---|---|
| . | 6 | 6 | 6 |
| • | • | • | • |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
- |   |   |   |   |
|---|---|---|---|
| . | 6 | 6 | 7 |
| • | • | • | • |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |

16. If  $\frac{3}{5} = \frac{x}{2.5}$ , what is the value of  $x$ ?

17. If  $3^j = 27$  and  $3^{j+k} = 243$ , what is the value of  $k$ ?

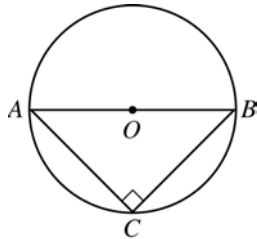
GO ON TO THE NEXT PAGE

18. The first term of a sequence of numbers is 2. If each term after the first is 3 more than twice the preceding term, what is the fourth term of this sequence?

19. If  $3 + \sqrt{a} = 5.3$ , what is the value of  $3 - \sqrt{a}$ ?

20. If  $a$ ,  $b$ , and  $c$  are the lengths of the sides of  $\triangle ABC$ , what is one possible value of  $\frac{a}{b+c}$ ?

21. A circus clown has 8 different hats, 10 different ties, 4 different pairs of pants, and 5 different jackets from which to choose when dressing for a performance. What is the total number of different combinations of 1 hat, 1 tie, 1 pair of pants, and 1 jacket from which the clown can choose when dressing for a performance?



22. In the figure above, the circle with center  $O$  has radius 7,  $AB$  is a diameter, and  $AC = BC$ . What is the area of  $\triangle ABC$ ?

23. For a concert, tickets that were purchased in advance of the day of the concert cost \$5.00 each and tickets purchased the day of the concert cost \$8.00 each. The total amount collected in ticket sales was the same as if every ticket purchased had cost \$5.50. If 100 tickets were purchased in advance, what was the total number of tickets purchased?

24. Each of the 8 edges of a pyramid with a square base is 4 inches long, and each edge of a cube is 4 inches long. The base of the pyramid is set on one face of the cube so that their vertices coincide. The new solid that is formed has how many faces?

25. Chairs ready for shipment at the Northern Chair factory come down a ramp in single file. Inspector  $A$  checks every third chair, beginning with the third. Inspector  $B$  checks every fifth chair, beginning with the fifth. If 98 chairs came down the ramp while both inspectors were working on Monday, how many of these chairs were not checked by either of these two inspectors?

**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  
31 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  E

- Officials charged that the bakery had engaged in ----- practices by misleading consumers about the nutritional value of certain products.  
(A) legitimate (B) exacting (C) intelligible  
(D) inordinate (E) deceptive
- As a young physics instructor, Richard Feynman discovered that he had the gift of sharing his ----- his subject and making that excitement -----.  
(A) passion for . . contagious  
(B) knowledge of . . inaudible  
(C) contempt for . . praiseworthy  
(D) propensity for . . futile  
(E) commitment to . . impersonal
- Even after hungrily devouring their entire lunch, the children were still ----- and clamored for more.  
(A) scrupulous (B) innocuous (C) remorseful  
(D) ravenous (E) compliant
- Some entertainers, their egos inflated by celebrity, see themselves as ----- figures to whom ordinary moral ----- do not necessarily apply.  
(A) penitent . . rules  
(B) privileged . . constraints  
(C) pedagogical . . enticements  
(D) redundant . . conventions  
(E) gifted . . benefits
- A story's theme is sometimes -----, that is, stated directly by the author, but more often it is -----.  
(A) obvious . . indisputable  
(B) capricious . . dramatic  
(C) convoluted . . simple  
(D) enigmatic . . veiled  
(E) explicit . . implied
- The biologists who breed California condors jokingly refer to the outdoor -----, the enclosures that house the birds, as "condorminiums."  
(A) arboretums (B) aquariums (C) depots  
(D) aviaries (E) kennels
- New York is a cosmopolitan city; its numerous newspapers in many languages reflect its ----- population.  
(A) polyglot (B) insular (C) bemused  
(D) vapid (E) homogeneous
- If people continually suppress their impulse to complain, whether the vexation is ----- or grave, they will appear to be automatons, ----- feeling.  
(A) fluid . . defined by  
(B) severe . . bereft of  
(C) deserving . . incapable of  
(D) frivolous . . consumed by  
(E) trivial . . devoid of
- Louisa May Alcott's ----- the philosophical brilliance of her father's intellect was ----- by her impatience with his unworldliness.  
(A) exasperation with . . contradicted  
(B) concealment of . . supplanted  
(C) respect for . . augmented  
(D) rebellion against . . qualified  
(E) reverence for . . tempered

GO ON TO THE NEXT PAGE





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) ● (C) (D) (E)

10. WAGE : WORKER ::  
 (A) pension : retiree  
 (B) donation : patron  
 (C) tip : diner  
 (D) fine : judge  
 (E) fee : member
11. CRATER : CONCAVE ::  
 (A) slope : steep  
 (B) plateau : flat  
 (C) reef : marine  
 (D) volcano : dormant  
 (E) moon : eclipsed
12. LECTURE : AUDIENCE ::  
 (A) text : translator  
 (B) essay : reader  
 (C) role : understudy  
 (D) novel : protagonist  
 (E) symphony : composer
13. PENCHANT : INCLINATION ::  
 (A) whim : decision  
 (B) aversion : taste  
 (C) fascination : interest  
 (D) clue : solution  
 (E) suspicion : certainty
14. DOGGEREL : VERSE ::  
 (A) animation : cinema  
 (B) scroll : document  
 (C) burlesque : drama  
 (D) chisel : sculptor  
 (E) headline : article
15. SOPHISTICATE : CALLOW ::  
 (A) misanthrope : introverted  
 (B) stockbroker : financial  
 (C) novice : unproved  
 (D) procrastinator : habitual  
 (E) malcontent : satisfied

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 16-21 are based on the following passage.**

*For centuries, Western society looked to the ancient Greek city-state of Athens as a model of a successful democracy. Solon (638?-559? B.C.) laid the groundwork for the Athenian excellence of subsequent years.*

Though later generations tended to glorify him with one voice as the founder of the Athenian democracy, Solon did not command such unqualified devotion during his life.

- Line The Athens in which he grew up in the latter part of the  
 5 seventh century B.C. was a land torn by political and social  
 dissension. The Athenian nobles of Solon's day were a  
 single-minded crew of hard-riding, high-living country  
 squires, untroubled by the slightest doubt of their god-given  
 10 right to the land and all the goods that sprang from it,  
 including political power. Because of the nobles' rapacity,  
 a good proportion of the commoners of Athens had lost  
 their land and even their freedom when failure to pay debts  
 resulted in their demotion to slave status. Eventually the  
 strife between the haves and the have-nots came to the  
 15 verge of civil war, and Solon was elected arbitrator and  
 chief magistrate. His strategy was a simple one. As he  
 himself wrote later, he "held his shield over both parties,"  
 fighting each on behalf of the other. Solon's impartiality  
 had negative effects for himself, however, and the result  
 20 was that both groups turned on him and he found himself  
 "at bay like a wolf among many hounds."

- 25 Solon was no leveler. He pitied the wretchedness of  
 the common folk and was indignant at the callous greed  
 of their exploiters, but he had no intention of overturning  
 the traditional balance of nobles and commoners. Their  
 relationships were to be governed by justice and the rule  
 of law.

- 30 Solon's description of the rule of law is broad in spirit  
 but intensely practical. He saw law and reason as the cement  
 that holds the body politic together. His twin goals were  
 freedom and unity for Athens, but he saw that freedom  
 could only be guaranteed by law and that unity could only  
 be based on reasonable consent. Solon stands as the dis-  
 35 coverer of the principle that has remained the core belief  
 of traditional Western democracies ever since: balancing  
 freedom and responsibility, consent and authority, the mor-  
 ally autonomous individual and the demands of society.

- 40 The verses in which Solon proclaims how he held his  
 shield over both parties and allowed neither to win more  
 than it deserved attest to his faith in justice, and to his  
 desire to discover the commonalities, rather than the dif-  
 ferences, shared by disputing parties. This approach made  
 Solon an innovative thinker, but it ultimately was the  
 source of his disfavor in his own time.

GO ON TO THE NEXT PAGE 



16. The author's characterization of the Athenian nobility (lines 6-13) indicates that they
- (A) abused their power and authority
  - (B) established a stable economic system
  - (C) derided the movement for democratic reform
  - (D) objected to lending money to commoners
  - (E) supported the commoners' political rights
17. Solon's claim about his "shield" (line 17) would be most directly contradicted by which hypothetical statement?
- (A) Solon favored the nobles after receiving large gifts from them.
  - (B) Solon empathized with the plight of the commoners.
  - (C) Solon refused to meet with anyone when he was making an important decision.
  - (D) Solon accepted exile from Athens after he established democracy.
  - (E) Solon listened to the concerns of both the nobles and the commoners.
18. Solon's comparison of himself to a wolf (line 21) emphasizes his
- (A) inability to cooperate with others
  - (B) unpopularity with both of Athens' warring factions
  - (C) stamina in pursuing a goal
  - (D) vulnerability to human interference
  - (E) cunning and bravery in competition
19. Which of the following is the most accurate description of Solon's tenure as arbitrator?
- (A) Athens recognized the need for a leader like Solon to head a new government.
  - (B) The commoners never expected Solon to rule in their favor.
  - (C) Solon envisioned himself as the future ruler of Athens.
  - (D) Solon wanted the commoners, not the nobles, to rule Athens.
  - (E) Solon desired fairness, but he did not advocate radical changes in Athens.
20. In line 28, "spirit" most nearly means
- (A) bodiless being
  - (B) sentient state
  - (C) essential principle
  - (D) animated disposition
  - (E) enthusiastic loyalty
21. Solon's achievement is best described as
- (A) founding a tradition of public service
  - (B) punishing a systematic abuse of power
  - (C) destroying a popular illusion
  - (D) implementing a lasting concept
  - (E) educating a generation of Athenians

GO ON TO THE NEXT PAGE 



Questions 22-31 are based on the following passage.

The following passage, taken from a book written in 1992, discusses the relative ease with which people can discern meaning from maps.

The eye and the brain seem to be particularly felicitous partners in the act of map-reading. It is as if we are physiologically disposed to extract information from maps more rapidly, more intuitively, more globally than from, for example, a text or visual scene. That process of visual mining begins with perception—a process that touches on both the physiological and the conceptual processing of map knowledge. Bearing that in mind, we might take a walk with astronomer Patrick Thaddeus, removing him from his preferred milieu, which is mapping carbon monoxide molecules in the Milky Way with a radio telescope at Harvard University, and placing him in a rather less exotic environment—namely, the woods surrounding his country home in upstate New York.

“The forest goes on for miles and miles,” Thaddeus explains. “And I love just walking through the woods by myself. You’re not alone, in the sense that the forest is crisscrossed with deer trails. These deer trails are quite imperceptible. But after a while you know how to recognize them and you can see them. They’re just very faint patterns that generally tend to go in a straight line. Now I followed one of these trails for a mile through the woods. And I suddenly stopped and asked myself, ‘How do I know I’m on this trail?’ But *I am* on it, and I suddenly get shaken off. The signal-to-noise ratio [the relevant information, or ‘signal,’ compared to irrelevant information, or noise] must be one in a thousand, or much less than that. That is, I know I’m on the trail because of a little leaf here, a very faint linear line. But there are much *stronger* sources of noise. Trees across the path, great rocks, and things like that—no computer in the world could possibly filter out that path from all of the conflicting signals around.”

Thaddeus can do this, he believes, because of evolution. “Finding your way home, getting back to your babies, your families, is something which we and our ancestors, both human and animal, have had to do for not just millions but *tens* of millions of years,” he continues. “Animals are *astonishingly* adept at that, following both visual traces and smell. Smell in humans is a very atrophied sense, but we’re particularly good at visual recognition. So it is technically true that I can follow these trails with a high degree of confidence, where I don’t think any computer in the world has ever been constructed, or could be programmed, to filter out all the noise and not lock onto the tree trunk or things like that. The point is, human beings think in terms of images, and they know what they are looking for. The educated eye knows what it’s looking for, can see things that are, in the technical sense of signal to noise, way, way below one. A very weak, astonishingly weak signal. That is, the human brain is an *incredible* filter for extracting information from confusion.”

Confusion is another name for the world unfiltered, and maps are external, constructed filters that make sense of the confusion, just as the eye and brain are internal, physio-

logical filters that cut through the bewildering mix of signal and noise in a visual scene. By breaking down the graphic or pictorial vocabulary to a bare minimum, maps achieve a visual minimalism that, physiologically speaking, is easy on the eyes. They turn numbers into visual images, create pattern out of measurements, and thus engage the highly evolved human capacity for pattern recognition. Some of the most intense research in the neurosciences today is devoted to elucidating what are described as maps of perception: how perception filters and maps the relentless torrent of information provided by the sense organs, our biotic instruments of measurement. Maps *enable* humans to use inherent biological skills of perception, their “educated” eyes, to separate the message from the static, to see the story line running through random pattern.

22. The primary purpose of the passage is to

- (A) discuss cultural differences in human navigation
- (B) draw attention to an important human ability
- (C) express admiration for the skills of mapmakers
- (D) explain the significance of Thaddeus’ research
- (E) provide background for a discussion of artificial intelligence

23. Taking the reader on a “walk” (line 9) primarily serves to

- (A) provide a vicarious experience of moving through space
- (B) make a hypothesis more concrete through a narrative
- (C) demonstrate the ease with which anyone can create a map
- (D) increase respect for the science of astronomical mapping
- (E) suggest the irony of an astronomer’s becoming lost in the woods

24. Which statement best summarizes Thaddeus’ point about signals and noise in lines 25-27 ?

- (A) A low ratio provides important information about signal strength.
- (B) Sometimes the noise is more interesting than the signal.
- (C) A signal often begins strongly and then diminishes.
- (D) Relative to noise, there is very little signal.
- (E) Signals that are powerful are often infrequent.

GO ON TO THE NEXT PAGE 



25. The phrase “educated eye” (line 47) refers to the
- (A) knowledge of a disciplined scientist
  - (B) ability to notice significant details
  - (C) appreciation of individual places
  - (D) habit of seeing only those things that are considered pleasant
  - (E) skill needed to create a map that is aesthetically pleasing
26. The portion of the passage relating to Thaddeus furthers the author’s discussion primarily by
- (A) providing immediate relevance to an abstract hypothesis
  - (B) introducing an extended example of an insoluble problem
  - (C) analyzing a now-discredited explanation of map reading
  - (D) presenting a scientific view of social behavior
  - (E) comparing humans and animals to filtration devices
27. The effect of “breaking down” (line 56) is to
- (A) accentuate selected information
  - (B) make details small
  - (C) create momentary confusion
  - (D) minimize the distinction between words and numbers
  - (E) eliminate words that would clarify the meaning of images
28. In line 60, “engage” most nearly means
- (A) reserve
  - (B) involve
  - (C) promise
  - (D) lure
  - (E) combat
29. In lines 63-64, the phrase “maps of perception” refers to
- (A) drawings of the organs of human perception
  - (B) depictions of how the world actually appears to the human eye
  - (C) models of the way humans process what they encounter
  - (D) illustrations of how the human eye functions at the cellular level
  - (E) representations of a place from one person’s perspective
30. The author’s reference to the “story line” (lines 68-69) serves the same illustrative purpose as what other example?
- (A) “carbon monoxide molecules in the Milky Way” (lines 10-11)
  - (B) “deer trails” (line 18)
  - (C) “any computer” (line 42)
  - (D) “the tree trunk” (line 44)
  - (E) “graphic or pictorial vocabulary” (lines 56-57)
31. Which of the following, if true, would suggest a basic flaw in the author’s reasoning?
- (A) Charting chemicals in the Milky Way bears little resemblance to mapping terrain.
  - (B) The human brain is quite adept at extracting important information from text.
  - (C) The ability to read visual cues is largely inherited rather than learned.
  - (D) Humans create maps not by perceiving existing patterns but by inventing patterns to cover up chaos.
  - (E) All primates have a highly evolved ability to perceive patterns in confusion.

## 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**  
**12 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 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 1-12 are based on the following passage.**

*The passage is adapted from the introduction to a memoir by a contemporary Native American writer. As a young woman, the author had decided to separate permanently from her family.*

In 1987 I had a dream about a turtle. (We are the last family left of the Turtle clan.) A dream, in other words, about the family.

Line 5 *I am walking along the shore of a lake or a bay toward a house in the distance. I step on a small turtle I did not see lying among the rocks and think I've killed it. I am filled with grief. I leave it there and hurry away towards the house. I come back to that place on the shore later and see that the turtle is not only alive but is no longer the size of a small rock. It has grown a hundred times its previous size. It's like a giant sea turtle and is very strong. I am filled with joy now. I watch as the great turtle walks into the water and swims away.*

15 The dream was saying that our family only appeared to be dead, stepped on, broken into a million little pieces. The family — or the power of the family — lives on in some form and is strong. The dream didn't make sense. It was only an expression of my longing. My unconscious would not, after all these years, accept what I knew to be true. *The family isn't dead*, it said. *Give it up*, I said. *Let it go.*

In late 1992, just days before this memoir was to go into print, a niece I hadn't seen for fifteen years called me at Eastern Washington University and left a message on my answering machine. *This is your niece* (she said her name). *I would love to see you. Please give me a call if you would like to get together.* Her voice was still familiar to me after all these years. I played the message several times, listening to her voice, remembering.

30 She is only seven years younger than I am. That was a lot when I was a child. She was my little baby doll then. I'd seen her only a few times after I left home at the age of fifteen. It wasn't my intention to see any family members while I was at Eastern. I wasn't going to contact any of them. I'd wanted to leave that door closed. They can't hurt me, I thought, as long as I stay away. *This is your niece. I would love to see you.* I picked up the phone and called her. She would take the day off work on Friday, she said, and come out to see me.

40 She did and didn't look the same as I remembered. I was amazed (though I shouldn't have been) to see that she was

approaching middle age. And her resemblance to me was jarring. Same eyes. Similar facial bone structure. I looked at her and saw the family I came from. She had brought along her little ten-year-old daughter (who resembled her) whom I'd never seen before. The three of us spent the day together: shopping at a mall, having lunch. I treated my great-niece to a professional haircut and style (French braid), the first one she'd ever had. My niece and I spoke as we waited.

50 My niece, at thirty-nine, was a person who had developed herself, learned through a long process to trust her own perceptions. We talked about the family and how dysfunction begets dysfunction.

55 She had written a master's thesis about dysfunctional families and how the dysfunction gets passed down from one generation to the next. Not intentionally. It almost has a life of its own. She told me how she and some of her siblings and cousins discussed their own healing, their desire to break the cycle. "The family is so important," she said. "Sometimes I reach out and I'm rebuffed. Well, I just figure they're not ready. Everyone has to heal in their own time and in their own way. And I'm just going to keep on reaching out."

65 Once I longed to belong to the family I came from. Not anymore. I'm one of its broken-off pieces now. But this niece and others were trying to make what's left of it strong again. I would like to believe the family has the power to regenerate itself. I told my niece about the dream I'd had that was about the family, the dream of the turtle.

1. The dream discussed in lines 4-13 most directly introduces which aspect of the narrator?
  - (A) The intensity of her feelings on a personal subject
  - (B) The urgency of her need to create
  - (C) The strength of her desire to live among new people
  - (D) The depth of her disillusionment with the modern family
  - (E) The persistence of her determination to meet a specific goal

GO ON TO THE NEXT PAGE 



2. The narrator's initial encounter with the turtle described in lines 5-6 suggests that she viewed herself as
- (A) inadvertently destroying something valuable
  - (B) unintentionally antagonizing a loved one
  - (C) unwittingly taking on an overwhelming task
  - (D) mistakenly placing blame on an innocent party
  - (E) unconsciously believing lies and misconceptions
3. In the narrator's dream (lines 4-13), the two sizes of the turtle most directly represent two
- (A) interpretations of past complaints made by unhappy family members
  - (B) views of the goals openly embraced by the narrator's family
  - (C) predictions about the outcome of the narrator's plans
  - (D) impressions of the health of the narrator's siblings
  - (E) conceptions of the state of the narrator's family
4. The passage suggests that for the dream to have made "sense" (line 17) to the narrator in 1987, the dream should have ended no later than at the point when the
- (A) narrator first walks along the shore
  - (B) narrator steps on something she does not see
  - (C) narrator thinks that she has killed the turtle
  - (D) turtle is one hundred times its original size
  - (E) narrator experiences great joy
5. The narrator most likely uses the present tense in describing the dream in order to
- (A) emphasize the urgency of the danger
  - (B) convey the shock of the unfamiliar setting
  - (C) clarify the mysterious atmosphere of the dream
  - (D) capture the immediacy of the impressions
  - (E) express the recurring beauty of the images
6. In line 20, "dead" most nearly means
- (A) closed
  - (B) obsolete
  - (C) stultifying
  - (D) empty of emotion
  - (E) beyond hope
7. In lines 18-21 ("My unconscious . . . *Let it go*"), the narrator conveys conflicting impulses primarily by
- (A) contrasting past and future actions
  - (B) exploring two sides of a long-standing controversy
  - (C) presenting two voices in an argument
  - (D) juxtaposing two people's views of a single decision
  - (E) comparing abstract ethical principles with actual behavior
8. The narrator's statement about "that door" (line 35) stresses the
- (A) appealing quality of the narrator's opportunity to visit relatives
  - (B) definite nature of a decision made before the phone call
  - (C) patronizing tone of the narrator's spoken comments
  - (D) contemptuous attitude of the narrator toward her niece
  - (E) unrealistic assumptions about privacy made by the narrator
9. The effect of including both the narrator's thoughts and the niece's voice in lines 35-37 ("They . . . *you*") is to
- (A) emphasize the discrepancy between their backgrounds
  - (B) illustrate the tension between generations
  - (C) introduce the personal ambitions of the niece
  - (D) recreate the seemingly tumultuous setting of the narrator's childhood
  - (E) underscore the apparent differences between their attitudes
10. The narrator's visit with her niece is most similar to the narrator's dream in that both episodes
- (A) reveal that the narrator's skepticism had unforeseen consequences
  - (B) suggest an alternative to the narrator's sense of her family's condition
  - (C) indicate that the narrator's beliefs contradicted her family's views
  - (D) imply that the narrator's desires had been shaped by her childhood fantasies
  - (E) hint that the narrator's impulses may have been unaccountably hostile

GO ON TO THE NEXT PAGE



11. The narrator and her niece differ most on the subject of
- (A) how a dysfunctional family harms individual members
  - (B) whether or not one generation's problems affect subsequent generations
  - (C) why it would be desirable for their family to overcome its difficulties
  - (D) whether it is worthwhile to make the effort to reunite their family
  - (E) whether or not individual members of their family are likely to treat them kindly
12. In lines 44-46, the physical appearance of the child is significant to the narrator because it
- (A) confirms the narrator's sense that outward impressions are misleading
  - (B) reminds the narrator of her experiences with her niece during childhood
  - (C) underscores the commonality that connects the three people
  - (D) illustrates the emotional ties inherent in relationships across generations
  - (E) reveals the continuity of aspirations from great-aunt to great-niece

## 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 7

Time — 15 minutes

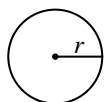
10 Questions

**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:**

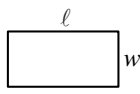
- The use of a calculator is permitted. All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not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

Reference Information

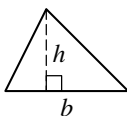


$$A = \pi r^2$$

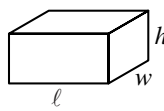
$$C = 2\pi r$$



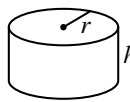
$$A = \ell w$$



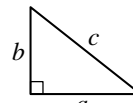
$$A = \frac{1}{2}bh$$



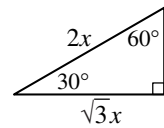
$$V = \ell wh$$



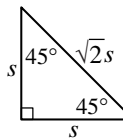
$$V = \pi r^2 h$$



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



Special Right Triangles

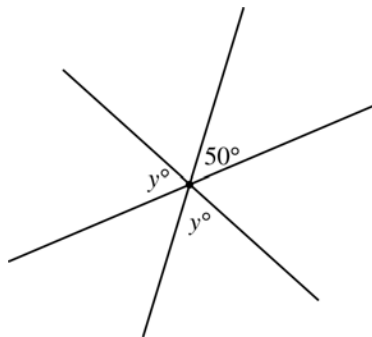


The number of degrees of arc in a circle is 360.

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.

- A certain type of candy bar weighs 3 ounces. What is the total weight, in pounds, of the contents of a box that contains 160 of these candy bars?  
(16 ounces = 1 pound)  
(A) 48 (B) 30 (C) 28 (D) 24 (E) 10



- In the figure above, three lines intersect at a point. What is the value of  $y$ ?  
(A) 65 (B) 70 (C) 75 (D) 80 (E) 85

- Add 3.
- Multiply by 4.
- Subtract 6.
- Divide by 5.

- The sequence of operations above is to be applied, in order, to a number  $x$  such that the result of each operation is used as the starting value for the next operation. Which of the following expressions represents the result after step 4 has been completed?

- (A)  $4(x + 3) - \frac{6}{5}$
- (B)  $\frac{4(x + 3)}{5} - 6$
- (C)  $\frac{4(x + 3) - 6}{5}$
- (D)  $\frac{4(x + 3 - 6)}{5}$
- (E)  $\frac{4x + 3 - 6}{5}$

GO ON TO THE NEXT PAGE



4. A crate contains 63 oranges, 47 apples, and 95 pears. If 1 more of each type of fruit were added to the crate, each of the three types of fruit could be divided equally among a group of people. What is the greatest possible number of people in such a group?

(A) 8 (B) 12 (C) 15 (D) 16 (E) 32

5. A 50-foot rope is cut into four pieces so that the length of the second piece is twice the length of the first piece, the length of the third piece is twice the length of the second piece, and the length of the fourth piece is 8 feet. What is the length, in feet, of the shortest piece?

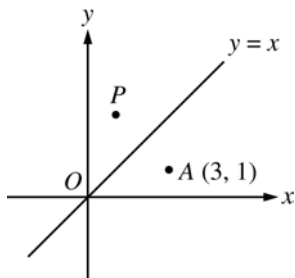
(A) 6 (B) 7 (C)  $7\frac{1}{2}$  (D) 8 (E)  $10\frac{1}{2}$

6. If  $\frac{x}{4} < 12$  and  $y = x + 3$ , which of the following must be true?

(A)  $x < 3$  (B)  $x < 16$  (C)  $y > 6$   
(D)  $y < 19$  (E)  $y < 51$

7. If the average (arithmetic mean) of  $r$  and  $s$  is 20 and the average of  $x$ ,  $y$ , and  $z$  is 30, what is the average of  $r$ ,  $s$ ,  $x$ ,  $y$ , and  $z$ ?

(A) 23 (B) 24 (C) 25 (D) 26 (E) 27



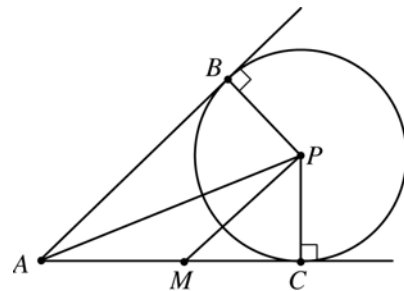
8. In the figure above, point  $P$  is the reflection of point  $A$  through the line  $y = x$ . What is the slope of the line that passes through points  $A$  and  $P$ ?

(A)  $-1$  (B)  $-\frac{1}{2}$  (C)  $0$  (D)  $\frac{1}{2}$  (E)  $1$

9. For integers  $q$ ,  $r$ ,  $s$ , and  $t$ , if  $q$  is a factor of  $r$ , and  $r$  is a factor of  $s$ , which of the following must be true?

I.  $q$  is a factor of  $s$ .  
II. If  $q$  is a factor of  $t$ , then  $r$  is a factor of  $t$ .  
III. If  $s$  is a factor of  $t$ , then  $q$  is a factor of  $t$ .

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



10. In the figure above, the circle has center  $P$  and radius  $r$ . Lines  $AB$  and  $AC$  are tangent to the circle. If  $M$  is the midpoint of segment  $AC$  and the measure of  $\angle PMC$  equals the measure of  $\angle MPC$ , what is the length, in terms of  $r$ , of segment  $PA$ ?

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

**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.