

# Description of the PLAN Tests

## The English Test (50 questions — 30 minutes)

The English Test measures your students' understanding of the conventions of standard written English and of rhetorical skills. The test consists of several prose passages, each accompanied by a number of multiple-choice test items.

### Usage/Mechanics

**Punctuation.** The items in this category test the student's knowledge of the conventions of internal and end-of-sentence punctuation, with emphasis on the relationship of punctuation to meaning.

**Grammar and Usage.** The items in this category test the student's understanding of agreement between subject and verb, between pronoun and antecedent, and between modifiers and the words modified; verb formation; pronoun case; formation of comparative and superlative adjectives and adverbs; and idiomatic usage.

**Sentence Structure.** The items in this category test the student's understanding of relationships between and among clauses, placement of modifiers, and shifts in construction.

### Rhetorical Skills

**Strategy.** The items in this category test the student's ability to choose expressions appropriate to an essay's audience and purpose; to gauge the effect of adding, revising, or deleting supporting material; and to judge the relevancy of statements in context.

**Organization.** The items in this category test the student's ability to organize ideas and to choose effective opening, transitional, and closing sentences.

**Style.** The items in this category test the student's ability to select precise and appropriate words and images, to maintain the level of style and tone in an essay, to manage sentence elements for rhetorical effectiveness, and to avoid ambiguous pronoun references, wordiness, and redundancy.

## The Mathematics Test (40 questions — 40 minutes)

The Mathematics Test measures your students' mathematics achievement. It emphasizes the solution of practical quantitative problems that require skills encountered in many first- and second-year high school courses (pre-algebra, elementary algebra, and plane geometry). While some material from second-year courses is included on the test, most items, including geometry items, emphasize content presented before the second year of high school. The test focuses on quantitative reasoning rather than on memorization of formulas, knowledge of techniques, or computation skill.

**Pre-Algebra.** Items in this category are based on operations with whole numbers, integers, decimals, and fractions. The topics covered include prime factorization, comparison of fractions, conversions, scientific notation, square roots, percent, absolute value, positive integer exponents, data representation, elementary counting and probability, mean, median, and mode.

**Elementary Algebra.** Items in this category are based on operations with algebraic expressions. The operations include substituting to evaluate algebraic expressions; simplifying algebraic expressions; adding, subtracting, and multiplying polynomials; factoring polynomials; and factoring to solve quadratic equations.

## Geometry

**Coordinate Geometry.** Items in this category cover topics on graphing in the standard coordinate plane. The topics include graphs of linear equations, measurement of lines, and determination of the slope of a line.

**Plane Geometry:** Items in this category cover such topics as measurement of plane surfaces, properties of polygons, properties of triangles, the Pythagorean theorem, and relationships involving circles.

## The Reading Test (25 questions — 20 minutes)

The Reading Test measures reading comprehension and requires your students to derive meaning from several reading passages by (1) referring to what is explicitly stated and (2) reasoning to determine implicit meanings and to draw conclusions, comparisons, and generalizations. The test includes three prose passages based on topics in prose fiction, the humanities, and the social sciences. The test focuses on the kinds of skills that readers must use in studying written materials across a range of subject areas, rather than on information from outside the passages, rote recall of facts, isolated vocabulary items, or rules of formal logic.

**Prose Fiction.** Intact short stories or excerpts from short stories or novels.

**Social Sciences.** Anthropology, archaeology, biography, business, economics, education, geography, history, political science, psychology, sociology.

**Humanities.** Passages from memoirs and personal essays and in the content areas of architecture, art, dance, ethics, film, language, literary criticism, music, philosophy, radio, television, and theater.

## The Science Test (30 questions — 25 minutes)

The Science Test measures your students' scientific reasoning skills with respect to information that is typically encountered in general, introductory science courses. The content of the Science Test includes biology, chemistry, physics, and the Earth/space sciences. Advanced knowledge in these subject areas is not required, but knowledge that is typically covered in early high school general science courses is needed to answer some of the questions.

The items require your students to recognize and understand the basic features of, and concepts related to, the information provided; to examine critically the relationships between the information provided and the conclusions drawn or hypotheses developed; and to generalize from the given information to gain new information, draw conclusions, or make predictions.

The test presents five sets of scientific information, each conveyed in one of three different formats.

**Data Representation.** This format presents students with graphic and tabular material similar to that found in science journals and texts. The items measure skills such as graph reading, interpretation of scatterplots, and interpretation of information presented in tables.

**Research Summaries.** This format provides students with descriptions of one or more related experiments. The items focus on the design of experiments and the interpretation of experimental results.

**Conflicting Viewpoints.** This format presents students with expressions of several hypotheses or views that, being based on differing premises or on incomplete data, are inconsistent with one another. The items focus on the understanding, analysis, and comparison of alternative viewpoints or hypotheses.

**SECTION A**

**TABLE 1: Item-Response Summary for English**

SECTION B Item Number	Percent of report group selecting each option, by response position					REFERENCE group percentage correct	Percentage difference (report group minus reference group percentage correct)			Item Number
	Asterisk marks correct response						Report group responded correctly			
	A / F	B / G	C / H	D / J	Omit		Less often	As often	More often	
Usage/Mechanics: Punctuation										
2	*71	3	10	16	0	60			11	2
14	14	1	14	*71	0	56			15	14
17	8	4	10	*77	0	62			15	17
29	*71	14	8	7	1	54			17	29
33	*72	12	13	2	1	59			13	33
35	3	*74	20	3	0	60			14	35
39	18	5	23	*54	0	41			13	39
<b>SECTION C</b>										
Avg. % Correct						<b>70</b>	<b>SECTION E</b>			<b>56</b>
Usage/Mechanics: Grammar and Usage										
1	2	16	*80	2	0	72		8		1
3	9	*89	0	2	0	75			14	3
21	9	38	3	*50	0	47		3		21
31	23	12	*55	10	0	40			15	31
32	8	6	16	*69	1	78		-9		32
37	17	*80	1	2	0	62			18	37
40	5	14	*78	2	1	58			20	40
4	6	*86	6	2	1	63			23	4
15	5	*75	8	12	1	77		-2		15
Avg. % Correct						<b>74</b>				<b>64</b>
Usage/Mechanics: Sentence Structure										
6	2	11	7	*80	0	67			13	6
7	1	12	3	*84	0	76		8		7
11	4	23	4	*69	0	52			17	11
16	*79	18	3	0	0	71		8		16
18	13	16	*61	10	0	71	-10			18
20	*87	6	4	3	0	76			11	20
22	5	11	3	*81	0	72		9		22
25	17	17	*63	2	1	68		-5		25
27	8	10	9	*73	1	65		8		27
28	2	24	*70	4	0	54			16	28
30	7	*80	4	8	1	67			13	30
34	14	12	*53	21	1	64	-11			34
38	*62	27	9	2	0	44			18	38
9	10	11	4	*74	1	42			32	9
Avg. % Correct						<b>73</b>				<b>64</b>

**KEY**

Section A
  Section B
  Section C
  Section D
  Section E

### **SECTION A. Identify your report group and reference group (top of first page of report for each subject area).**

- ? Does your report group represent your entire 10th-grade class or some portion of your 10th-grade class? (Note: Only the records of students tested in standard-time test administrations are included.)
- If your report group represents only a portion of your class, your results may not apply to your entire class.

### **SECTION B. Study the items within each content area (PLAN test booklet).**

- ? What differences are there between your curriculum and the skills and knowledge covered by each PLAN content area?
- Use the descriptions of the tests given on the back page of this guide to determine the skills and knowledge tested within each content area. Use the items themselves to identify more specific skills or knowledge required to answer correctly the items in each content area. Identify the skills and knowledge you emphasize in your curriculum, and determine the similarities and differences between your curriculum and the test contents.
  - PLAN test items represent skills and knowledge from broader content domains. Focus on each domain of skills and knowledge, rather than the contents of specific items. Specific items will not be used again on future forms of PLAN.

### **SECTION C. Evaluate your report group performance in each content area (percentage selecting each response option).**

- ? Given your curriculum, is the percentage of your report group answering each item correctly consistent with your expectations? (The correct response is indicated by an asterisk.)
- Determine whether your students tended to respond correctly to items in a content area that you emphasize in your curriculum.
- ? Is a large percentage of your report group choosing incorrect response options?
- Incorrect options may represent common misconceptions related to the skill or knowledge measured by the item. If your students did not perform as well as you expected on some items, the incorrect options can help you identify the source of errors being made.

- ? Is a large percentage of your report group omitting responses to items?
- If you have high omit rates at the end of the test, you may want to consider other factors, such as general test-taking skills, that can influence your students' performance.
  - High omit rates near the beginning of the test or on difficult items may indicate that your students did not know the answer.

### **SECTION D. Compare the performance of your report group with that of a national reference group.**

In order to give you an idea of how well your students did on PLAN compared to other students from across the nation, ACT has included test results from a national reference group. This group consists of several thousand fall 10th graders who had previously taken the same test form as your students as part of a special study.

- ? Is there a consistent pattern of your report group responding correctly less often, as often, or more often than the reference group in a content area?
- Differences in percentage correct that occur in the "Less often" and "More often" columns are likely to reflect real differences between the report and reference groups. When differences across items in a content area consistently fall in these columns, your report group is more or less prepared than the reference group in that content area. Some individual items may appear in these columns solely due to chance and should be interpreted cautiously, however. Look for consistent patterns of difference between your report group and the reference group performance.
  - Differences in percentage correct between your report group and the reference group that occur in the "As often" column are likely not to be significant.

### **SECTION E. Examine the overall performance of your report group in each content area (average percentage correct).**

- ? Is your report group's average percentage correct similar to that of the reference group?
- If consistent patterns of item-level performance occur in a content area, comparing report and reference group average percentage correct will help confirm your report group's strengths and weaknesses in that content area. Where no consistent pattern is apparent, differences between the report and reference group average percentage correct are likely due to chance.
  - Report and reference group comparisons of average percentage correct (as well as patterns of item-level performance) should always be interpreted relative to the skills and knowledge emphasized in your curriculum.

**TABLE 2: Item-Response Summary for Mathematics**

Item Number	Percent of report group selecting each option, by response position						REFERENCE group percentage	Percentage difference (report group minus reference group percentage correct)			Item Number
	Asterisks mark correct responses.							Report group responded correctly			
	A / F %	B / G %	C / H %	D / J %	E / K %	Omit %		Less often	As often	More often	
<b>Pre-Algebra</b>											
1	0	1	1	6	*91	0	83		8		1
10	2	4	1	0	*92	0	76			16	10
11	4	*78	5	6	7	1	59			19	11
13	9	16	2	2	*71	0	58			13	13
16	8	7	*66	5	13	1	49			17	16
17	7	12	*59	19	1	1	47			12	17
19	5	10	*67	13	5	1	41			26	19
20	5	5	5	11	*73	0	56			17	20
22	5	9	8	*69	7	1	53			16	22
23	30	*53	3	11	2	1	41			12	23
24	3	8	*78	5	3	1	58			20	24
27	11	14	13	*51	9	3	33			18	27
31	16	13	*47	10	6	7	31			16	31
32	*27	24	18	16	6	10	20		7		32
Avg. % Correct	66%						50%				
<b>Elementary Algebra</b>											
3	1	2	*89	4	4	0	75			14	3
5	2	2	*73	1	22	0	72		1		5
12	*75	3	6	14	2	1	65			10	12
14	10	3	6	*80	2	0	53			27	14
15	*52	21	20	4	1	1	45		7		15
29	26	14	18	7	*33	2	26		7		29
30	5	12	20	19	*38	6	27			11	30
35	19	10	22	*18	20	11	19		-1		35
Avg. % Correct	57%						48%				
<b>Coordinate Geometry</b>											
4	3	3	3	*89	2	0	75			14	4
8	6	2	1	2	*89	0	80		9		8
18	*48	18	25	7	1	1	41		7		18
21	4	*59	14	19	3	1	40			19	21
37	*28	20	23	10	5	14	21		7		37
38	16	20	18	13	*18	15	11		7		38
39	18	17	18	*13	17	17	15		-2		39
Avg. % Correct	49%						40%				

**TABLE 2: Item-Response Summary for Mathematics**

Item Number	Percent of report group selecting each option, by response position						REFERENCE group percentage	Percentage difference (report group minus reference group percentage correct)			Item Number
	Asterisks mark correct responses.							Report group responded correctly			
	A / F %	B / G %	C / H %	D / J %	E / K %	Omit %		Less often	As often	More often	
<b>Plane Geometry</b>											
2	*92	5	1	1	1	0	80			12	2
6	*82	7	1	7	3	0	75	7			6
7	5	*81	5	8	0	0	69			12	7
9	17	1	5	*76	1	0	63			13	9
25	19	*39	22	13	4	3	32	7			25
26	32	9	*42	11	4	2	28			14	26
28	18	8	13	7	*51	2	36			15	28
33	6	*44	11	10	20	9	33			11	33
34	19	*43	18	6	5	9	35	8			34
36	12	16	*20	15	26	13	17	3			36
40	16	*23	11	23	11	16	18	5			40
Avg. % Correct	54%						44%				

# 2

## MATHEMATICS TEST

40 Minutes—40 Questions

**DIRECTIONS:** Solve each problem, choose the correct answer, and then fill in the corresponding oval on your answer folder.

Do not linger over problems that take too much time. Solve as many as you can; then return to the others in the time you have left for this test.

You are permitted to use a calculator on this test. You may use your calculator for any problems you choose,

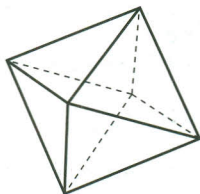
but some of the problems may best be done without using a calculator.

Note: Unless otherwise stated, all of the following should be assumed.

1. Illustrative figures are NOT necessarily drawn to scale.
2. Geometric figures lie in a plane.
3. The word *line* indicates a straight line.
4. The word *average* indicates arithmetic mean.

1. An elevator in a high-rise office building let off passengers on the 20th floor and then went up 12 floors to pick up Abe, who rode down 7 floors and got off the elevator. As Abe got off, Betty got on and rode up 15 floors, where she got off and Carlos got on. Carlos rode down 4 floors and got off. At what floor did Carlos get off the elevator?
  - A. 4th
  - B. 14th
  - C. 20th
  - D. 26th
  - E. 36th

2. The point at the intersection of 4 faces of an octahedron (shown below) is called a *vertex point*. How many vertex points does an octahedron have?

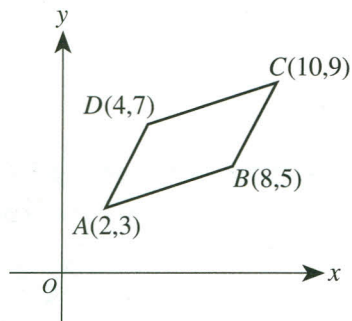


- F. 6
  - G. 8
  - H. 12
  - J. 16
  - K. 24
3. A formula commonly used to calculate distance traveled is  $d = rt$ , in which  $d$  is distance,  $r$  is rate, and  $t$  is time traveled. How many hours will it take you to travel 360 miles at an average rate of 45 miles per hour?
    - A. 0.125
    - B. 1.25
    - C. 8
    - D. 315
    - E. 16,200

**DO YOUR FIGURING HERE.**

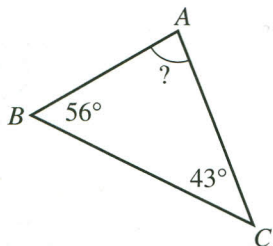
DO YOUR FIGURING HERE.

4. As shown in the standard  $(x,y)$  coordinate plane below, parallelogram  $ABCD$  has vertices  $A(2,3)$ ,  $B(8,5)$ ,  $C(10,9)$ , and  $D(4,7)$ . The midpoint of  $\overline{AC}$  is the same as the midpoint of what other segment?



- F.  $\overline{AB}$   
 G.  $\overline{AD}$   
 H.  $\overline{BC}$   
 J.  $\overline{BD}$   
 K.  $\overline{CD}$
5. Which of the following is equivalent to  $2x^4$  ?
- A.  $2 \cdot x \cdot 4$   
 B.  $2 \cdot 4 \cdot x \cdot 4$   
 C.  $2 \cdot x \cdot x \cdot x \cdot x$   
 D.  $2 \cdot 4 \cdot x \cdot x \cdot x \cdot x$   
 E.  $2 \cdot 2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x \cdot x$
6. The area of a rectangle is 28 square millimeters. The length of the rectangle is 7 millimeters. What is the width of the rectangle, in millimeters?
- F. 4  
 G. 7  
 H. 8  
 J. 21  
 K. 35

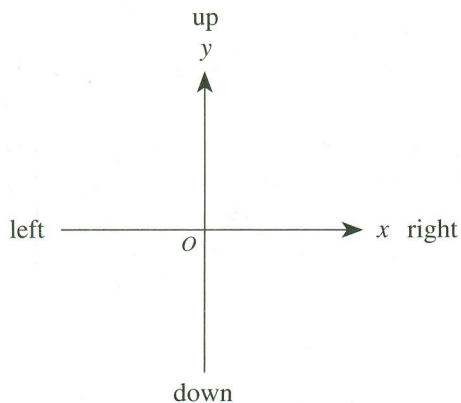
7. In  $\triangle ABC$  below, what is the measure of  $\angle A$  ?



- A.  $77^\circ$   
 B.  $81^\circ$   
 C.  $90^\circ$   
 D.  $99^\circ$   
 E.  $103^\circ$

DO YOUR FIGURING HERE.

8. Which of the following phrases describes the location of the point  $(4,-7)$  relative to the origin in the standard  $(x,y)$  coordinate plane below?



- F. Left 7 units, up 4 units  
 G. Left 4 units, up 7 units  
 H. Right 7 units, down 4 units  
 J. Right 4 units, up 7 units  
 K. Right 4 units, down 7 units
9. The city block that Addie lives on is rectangular, having a length of 420 feet and a width of 350 feet. When Addie walks along the entire perimeter of the city block once, how many feet does she walk?
- A. 770  
 B. 1,400  
 C. 1,470  
 D. 1,540  
 E. 1,680
10. Tama, a member of the school basketball team, has made 18 free throws of the 25 free throws she has attempted. What percent of her free throws has she made?
- F. 7%  
 G. 13%  
 H. 18%  
 J. 25%  
 K. 72%
11. The sum of 6 numbers is 108, and the sum of 9 other numbers is 162. What is the average of these 15 numbers?
- A. 7.5  
 B. 18  
 C. 20  
 D. 36  
 E. 135



12. The operation  $B @ C$  is defined as  $B + 2C$ . What is the value of  $8 @ 3$  ?

F. 14  
G. 19  
H. 22  
J. 24  
K. 48

13. Which of the following lists the fractions  $\frac{11}{21}$ ,  $\frac{13}{25}$ , and  $\frac{2}{3}$  in order from least to greatest?

A.  $\frac{2}{3} < \frac{11}{21} < \frac{13}{25}$   
B.  $\frac{11}{21} < \frac{13}{25} < \frac{2}{3}$   
C.  $\frac{11}{21} < \frac{2}{3} < \frac{13}{25}$   
D.  $\frac{13}{25} < \frac{2}{3} < \frac{11}{21}$   
E.  $\frac{13}{25} < \frac{11}{21} < \frac{2}{3}$

14. Which of the following inequalities is equivalent to  $2x - 9 \geq 11$  ?

F.  $x \leq 10$   
G.  $x \geq -\frac{7}{2}$   
H.  $x \geq 1$   
J.  $x \geq 10$   
K.  $x \geq \frac{29}{2}$

15. For every integer  $n$ , the sum of  $n$  and  $(n + 1)$  is:

A. odd.  
B. even.  
C. divisible by 3.  
D. divisible by 5.  
E. divisible by 7.

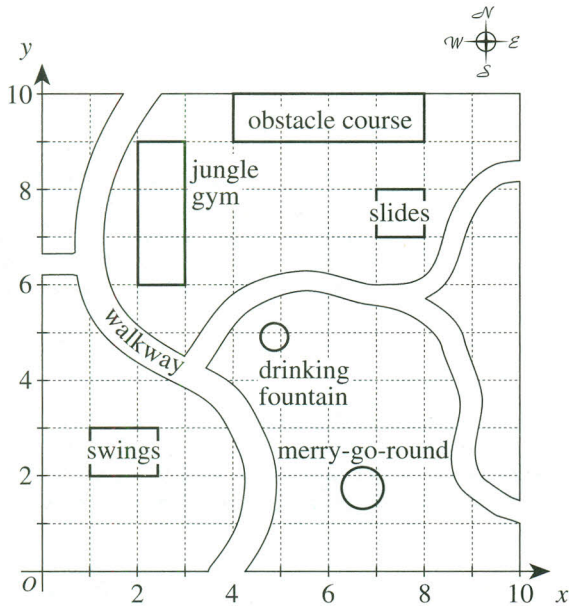
16. What is the value of the expression  $200 - 3(\sqrt{9 - 4})^2$  ?

F. 125  
G. 169  
H. 185  
J. 191  
K. 197

DO YOUR FIGURING HERE.

Use the following information to answer questions 17 and 18.

A diagram of a playground is shown in Quadrant I in the standard  $(x,y)$  coordinate plane below. Each unit on each axis represents 10 yards. The playground has a walkway, sections for 5 activities (swings, merry-go-round, slides, jungle gym, and obstacle course), and a drinking fountain near the center.



17. Freddie always enters the playground from the south and plays on the swings first. He proceeds to the other 4 activities at random. In how many different orders can he visit each of the other 4 activities exactly once?
- A. 4  
 B. 10  
 C. 24  
 D. 120  
 E. 720
18. Which of the following is closest to the distance, in yards, from the northwest corner of the swings to the northwest corner of the slides?
- F. 80  
 G. 90  
 H. 110  
 J. 120  
 K. 140

19. What is the positive difference between the mean and the median of the 6 numbers given below?

13 23 12 20 13 15

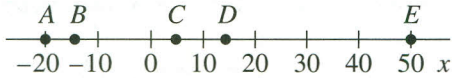
- A. 0
- B. 1
- C. 2
- D. 3
- E. 4

20. The monthly expenses and income from March through May for the Footloose Shoe Store are shown in the chart below. What was the total profit or loss from March through May?

	Income	Expense
March	\$172,000	\$156,000
April	\$158,000	\$146,000
May	\$192,000	\$186,000

- F. Loss of \$14,000
- G. Loss of \$30,000
- H. Profit of \$ 6,000
- J. Profit of \$20,000
- K. Profit of \$34,000

21. One of the points on the real number line shown below represents the sum of  $3\sqrt{36}$  and  $-8\sqrt{16}$ . Which one?



- A. A
- B. B
- C. C
- D. D
- E. E

22. When the sum of the digits in a number is divisible by 3, then so is the number. The 5-digit number below will be divisible by 3 if which of the following digits is in the tens place?

27,8□5

- F. 9
- G. 6
- H. 3
- J. 2
- K. 1

23.  $|2(1 - 5) + 3| = ?$

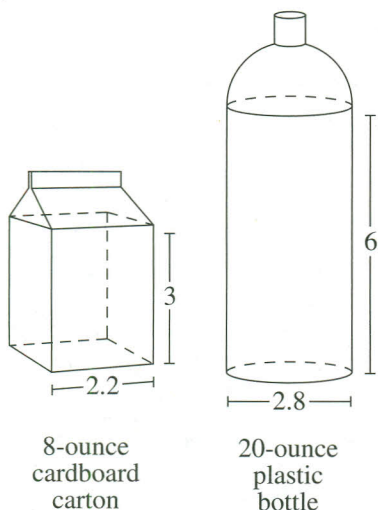
- A. -5
- B. 5
- C. -11
- D. 11
- E. 15

# 2

Use the following information to answer questions 24–27.

DO YOUR FIGURING HERE.

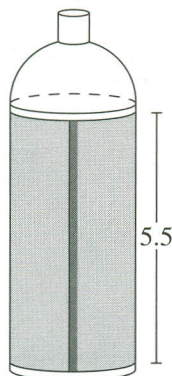
The Juice-To-Go Company uses 2 different kinds of containers for its juice. The cardboard carton holds 8 ounces of juice in a rectangular prism with a square base that is 2.2 inches on a side. The plastic bottle holds 20 ounces of juice in a right circular cylinder with a diameter of 2.8 inches. The containers and the heights, in inches, to which they are filled with juice are shown in the figure below.



24. The nutrition label on the plastic container states that 1 serving is 8 ounces and that each serving has 110 calories. How many calories are in the plastic bottle of juice?

F. 130  
 G. 220  
 H. 275  
 J. 330  
 K. 880

25. The rectangular label of the plastic bottle goes all the way around the cylindrical part of the bottle and has 0.5 inches of overlap, as shown in the figure below. The height of the label is 5.5 inches. Which of the following is an expression for the area, in square inches, of the label?



A.  $5.5(2.8 + 0.5)$   
 B.  $5.5(2.8\pi + 0.5)$   
 C.  $5.5(2.8\pi) + 0.5$   
 D.  $5.5[(2.8 + 0.5)\pi]$   
 E.  $2[5.5 + (2.8 + 0.5)]$

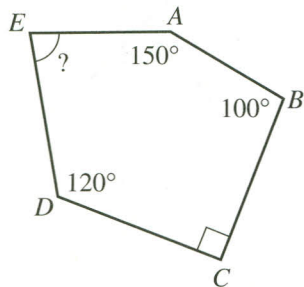
26. Which of the following is closest to the volume, in cubic inches, of the juice in the cardboard carton?

F. 6.6  
 G. 11.4  
 H. 14.5  
 J. 19.8  
 K. 45.6

27. The Juice-To-Go Company is promoting a new cardboard carton that holds 20% more juice than the old cardboard carton. To the nearest 0.1 ounce, how many ounces of juice will the new cardboard carton hold?

A. 8.1  
 B. 8.2  
 C. 9.2  
 D. 9.6  
 E. 10.0

28. If you add up the measures of all 5 interior angles in the pentagon below, the sum is the same as you would get for any other pentagon. What is the measure of  $\angle E$ ?



F.  $60^\circ$   
 G.  $65^\circ$   
 H.  $70^\circ$   
 J.  $75^\circ$   
 K.  $80^\circ$

29. The polynomial expression  $(2x - 3)(x - 4)$  is equivalent to which of the following?

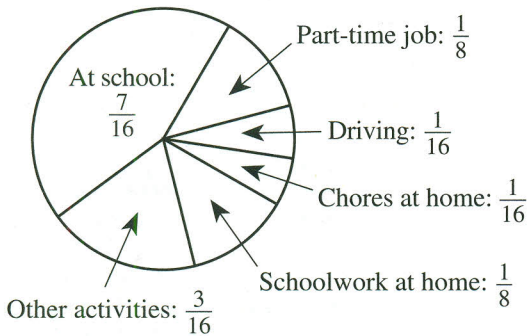
A.  $2x^2 - 7$   
 B.  $2x^2 - 12$   
 C.  $2x^2 + 12$   
 D.  $2x^2 - 11x - 12$   
 E.  $2x^2 - 11x + 12$

## DO YOUR FIGURING HERE.

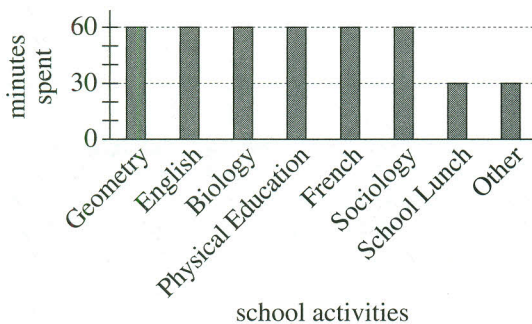
30. The Dawn Theater charges \$6.00 for each adult ticket and \$2.50 for each child's ticket for an early movie. For last Saturday's early movie, 240 tickets were sold for a total of \$1,265.00. How many adult tickets were sold?
- F. 28
  - G. 50
  - H. 120
  - J. 125
  - K. 190

31. According to the graphs below, what fraction of Girard's 16 waking hours on each weekday is spent at School Lunch?

Fraction of Girard's 16 waking hours spent on activities each weekday



Distribution of Girard's time "At school"



- A.  $\frac{1}{16}$
- B.  $\frac{1}{24}$
- C.  $\frac{1}{32}$
- D.  $\frac{1}{48}$
- E.  $\frac{7}{128}$

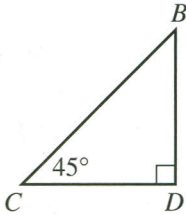
## DO YOUR FIGURING HERE.

32. What is the ratio of the number of positive common multiples less than 100 of the numbers 3 and 5 to the number of positive common multiples less than 100 of the numbers 2 and 7?

(Note: For example, the positive common multiples less than 100 of 2 and 3 are 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, 90, and 96.)

- F.  $\frac{6}{7}$   
 G.  $\frac{6}{13}$   
 H.  $\frac{7}{6}$   
 J.  $\frac{7}{13}$   
 K.  $\frac{13}{6}$

33. In  $\triangle BCD$  below, altitude  $\overline{BD}$  is 4 inches long. What is the perimeter, in inches, of  $\triangle BCD$ ?



- A. 8  
 B.  $8 + 4\sqrt{2}$   
 C.  $12\sqrt{2}$   
 D.  $12 + \sqrt{3}$   
 E. 16
34. A circular play area has a diameter of 12 yards. A fence is put around the play area, with a 2-yard section of the circle left open as the entrance. Which of the following is closest to the minimum number of yards of fencing needed?

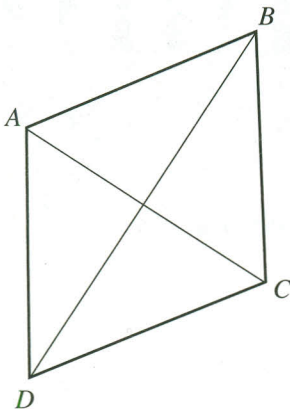
- F. 32  
 G. 36  
 H. 38  
 J. 69  
 K. 73

## DO YOUR FIGURING HERE.

35. At Toys-for-Less, Zorts sell for a particular unit price, regardless of how many you purchase. For  $x$  dollars, you can purchase 200 Zorts. How many Zorts can you purchase for  $n$  dollars, if  $n$  is a multiple of the unit price of the Zorts?

- A.  $\frac{xn}{200}$   
B.  $\frac{200}{xn}$   
C.  $\frac{x}{200n}$   
D.  $\frac{200n}{x}$   
E.  $\frac{200x}{n}$

36. In the figure below,  $ABCD$  is a quadrilateral with all 4 sides congruent. The diagonals,  $\overline{AC}$  and  $\overline{BD}$ , bisect each other and have lengths of 30 centimeters and 40 centimeters, respectively. What is the area of  $ABCD$ , in square centimeters?

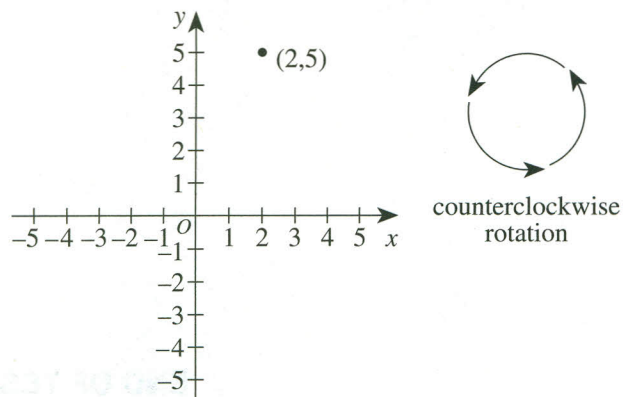


- F. 150  
G. 300  
H. 600  
J. 625  
K. 1,200



DO YOUR FIGURING HERE.

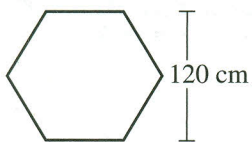
37. The point  $(2,5)$  is shown in the standard  $(x,y)$  coordinate plane below. What are the coordinates of the image of  $(2,5)$  under a counterclockwise rotation of  $90^\circ$  about the origin?



- A.  $(-5, 2)$   
 B.  $(-2, -5)$   
 C.  $(-2, 5)$   
 D.  $(5, -2)$   
 E.  $(5, 2)$
38. In the standard  $(x,y)$  coordinate plane, the slope of the line  $\overleftrightarrow{AB}$  is 3 times the  $y$ -intercept of the line  $\overleftrightarrow{BC}$ . The equation for  $\overleftrightarrow{BC}$  is  $8x + 4y = 10$ . What is the slope of  $\overleftrightarrow{AB}$ ?
- F.  $-6$   
 G.  $-2$   
 H.  $\frac{5}{2}$   
 J.  $\frac{5}{6}$   
 K.  $\frac{15}{2}$
39. A line drawn in the standard  $(x,y)$  coordinate plane passes through the points  $(p,q)$  and  $(m,-q)$ . The slope of the line is 2. What is  $p - m$ , in terms of  $q$ ?
- A.  $-4q$   
 B.  $-q$   
 C.  $0$   
 D.  $q$   
 E.  $4q$

# 2

40. What is the length, in centimeters, of 1 side of the regular hexagon shown below?



- F.  $20\sqrt{3}$
- G.  $40\sqrt{3}$
- H.  $80\sqrt{3}$
- J.  $120\sqrt{2}$
- K. 120

**DO YOUR FIGURING HERE.**

**END OF TEST 2**

**STOP! DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.  
DO NOT RETURN TO THE PREVIOUS TEST.**