

Arizona's Instrument to Measure Standards (AIMS)

Sample Test Grade 8



Arizona Department of Education
Tom Horne, Superintendent of Public Instruction

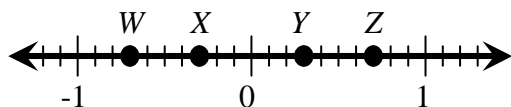
Assessment Section
602-542-5031

Revised September, 2005

Mathematics

DIRECTIONS: Read each question and choose the best answer.

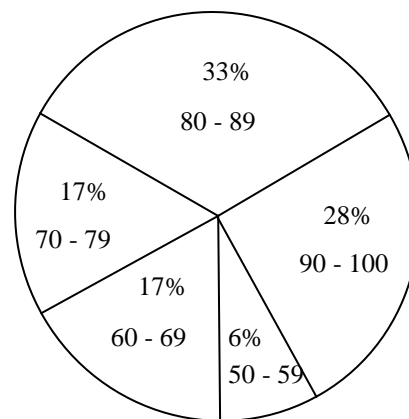
- 1 Which point is located **closest** to $-\frac{7}{10}$ on the number line below?



- A W
B X
C Y
D Z
- 2 Juan is saving to buy a leather basketball that costs \$40.00. He already has \$12 and will save \$3.50 per week until he has enough money to buy the basketball. At this rate, what is the least number of weeks it will take for Juan to have \$40.00?
- A 4
B 8
C 12
D 15

- 3 Ms. Chavez made a circle graph to show the results of last week's math test. There are 18 students in Ms. Chavez' class.

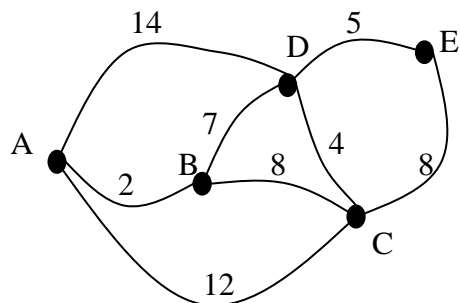
Scores on Math Test



According to the circle graph, which of these is **closest** to the number of students who scored less than 80 on the math test?

- A 18
B 10
C 7
D 5

- 4 The following vertex-edge graph represents the difficulty level of the path between each pair of vertices. The greater the number, the more difficult the path.



Which path (from A to E) is the least difficult?

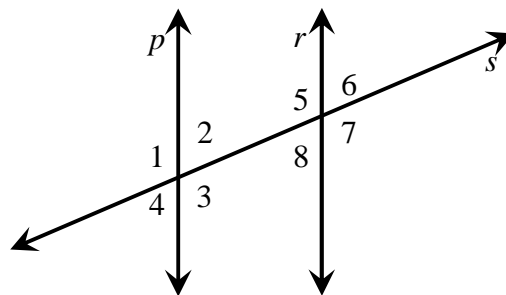
- A Path $A \rightarrow D \rightarrow E$
 B Path $A \rightarrow C \rightarrow E$
 C Path $A \rightarrow B \rightarrow D \rightarrow E$
 D Path $A \rightarrow C \rightarrow D \rightarrow E$
- 5 A tree farm charges \$75.00 for a 5-foot orange tree and \$50.00 for delivery regardless of the number of trees purchased. Which equation expresses the total cost, C , in terms of the number of 5-foot trees, t , purchased?
- A $C = 75 + 50t$
 B $C = 75t + 50$
 C $C = 75t + 5$
 D $C = 75 + 5t$

- 6 Mary wrote a sequence using the following steps:

- She chose -10 as the first term.
- Each term after the first was 4 less than the immediately preceding term.

What are the first five terms in Mary's sequence?

- A -10, -6, -2, 0, 4
 B -10, -6, -2, 2, 6
 C -10, -14, -18, -20, -24
 D -10, -14, -18, -22, -26
- 7 In the diagram below, lines p and r are parallel. Line s is a transversal that is not perpendicular to lines p and r .



Which angle is **not** congruent to $\angle 5$?

- A $\angle 1$
 B $\angle 2$
 C $\angle 3$
 D $\angle 7$

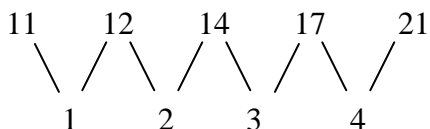
- 8 Which set below includes only irrational numbers?

- A $\{-\sqrt{12}, -3.\overline{76}, \sqrt{36}, 4.3858...\}$
 B $\{-7.2322..., \sqrt{5}, \sqrt{15}, 8.27451...\}$
 C $\{-5.6, \sqrt{14}, 6.\overline{3245}, \sqrt{81}\}$
 D $\{-\sqrt{8}, .\overline{37}, 3.265165065..., \sqrt{90}\}$

- 9 Diane wants to extend the pattern shown below.

11, 12, 14, 17, 21, ...

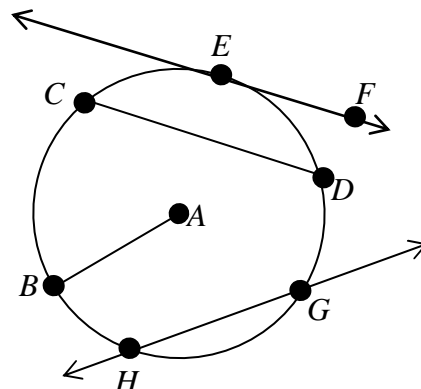
She noticed another pattern when she found the differences between terms as shown in the diagram below.



If the differences continue to increase by 1, what will be the 9th term in Diane's original pattern?

- A 25
 B 26
 C 39
 D 47

- 10 Points $B, C, D, E, G,$ and H lie on circle A .



In the diagram, which segment appears to be a tangent to circle A ?

- A \overline{CD}
 B \overline{AB}
 C \overline{EF}
 D \overline{GH}

- 11 What is the standard notation for the following expression?

$$1.35 \times 10^{-2}$$

- A 0.0135
 B 0.135
 C 135
 D 13500

- 12** The students in Ms. Romero’s social studies class are preparing to learn about South American countries. The table below shows possible report topics.

Country	Geographic Feature	Visual Display
Columbia	Mountain	Map
Chile	River	Flag
Argentina	Lake	Currency
Brazil		

Each student will select a country, a geographic feature to study, and a visual display.

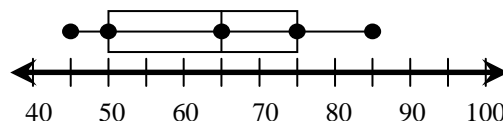
How many different types of reports with 1 country, 1 feature, and 1 display can the students write?

- A** 80
B 36
C 10
D 4
- 13** What is the value of the expression below when $a = 6$ and $b = 2$?

$$4b + ab \div (a - b)$$

- A** 5
B 9
C 11
D 16

- 14** Which number is **closest** to the median of the data set represented by the box-and-whiskers plot below?



- A** 75
B 65
C 60
D 50

- 15** Which equation could represent the relationship between x and y in the T-chart shown below?

x	y
1	3
2	7
3	11

- A** $y = x + 2$
B $y = 4x - 1$
C $y = 2x + 1$
D $y = 5x - 2$

AIMS Sample Test – Mathematics
Grade 8

- 16** A girl dropped four objects into a river to see which would float downriver fastest to a bridge where her friend was waiting. The following clues will show the order in which the objects reached the bridge.

- The feather either finished in 2nd or 3rd place.
- The stick finished before the leaf.
- The cork finished before the stick.
- The stick finished 3rd.

Which list shows the objects in the order that they reached the bridge?

- A** leaf, feather, stick, cork
- B** cork, stick, feather, leaf
- C** stick, cork, feather, leaf
- D** cork, feather, stick, leaf

- 17** Josie's age is four years greater than double Mario's age. If Mario's age is n years, which of these expressions represents Josie's age?

- A** $4n$
- B** $4n + 2$
- C** $2n + 4$
- D** $2(n + 4)$

- 18** Determine the value of x that makes the equation below true.

$$5x + 2 = 42$$

Which of the following equations is true for the same value of x ?

- A** $4x + 2 = 30$
- B** $3x - 3 = 5$
- C** $3x + 4 = 20$
- D** $2x - 4 = 12$

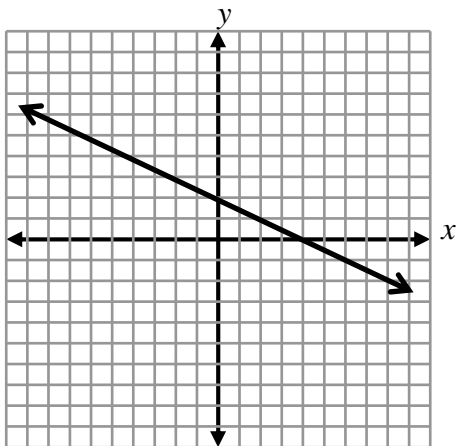
- 19** Maria had a collection of bracelets. Next week she will give her sister 18 of her bracelets, which is approximately $\frac{1}{3}$ of her collection.

Which of the following could be the number of bracelets in Maria's collection?

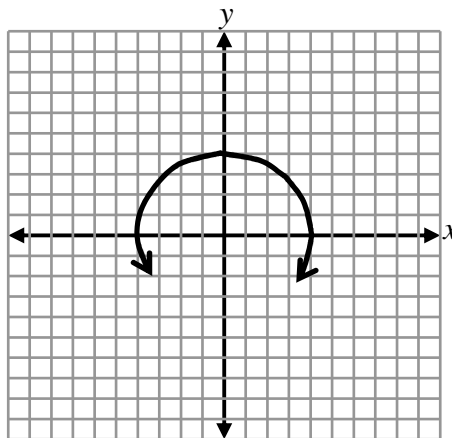
- A** 41
- B** 46
- C** 50
- D** 53

20 Which graph represents a linear function of x ?

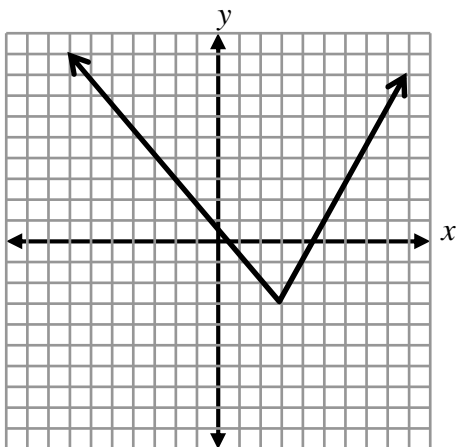
A



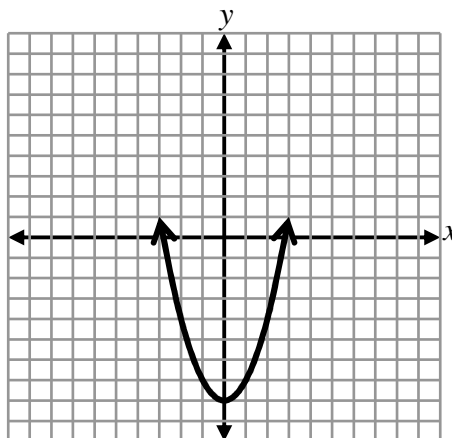
C



B

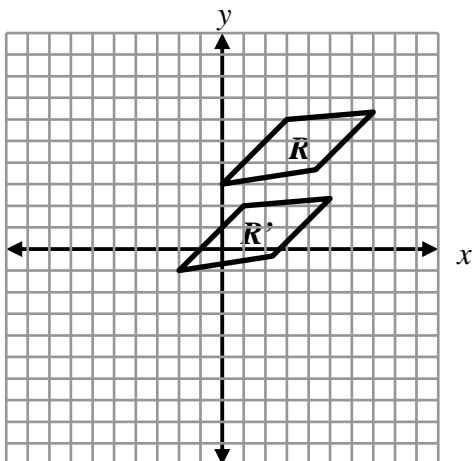


D

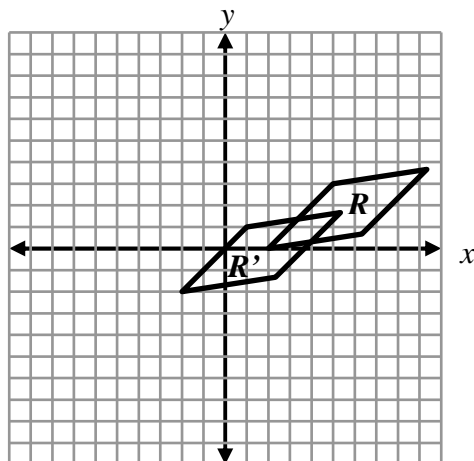


- 21 A figure on the graph is translated down 4 units and left 2 units. Which of the following represents this single transformation?

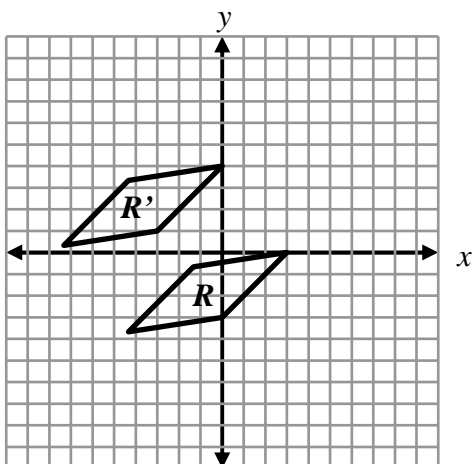
A



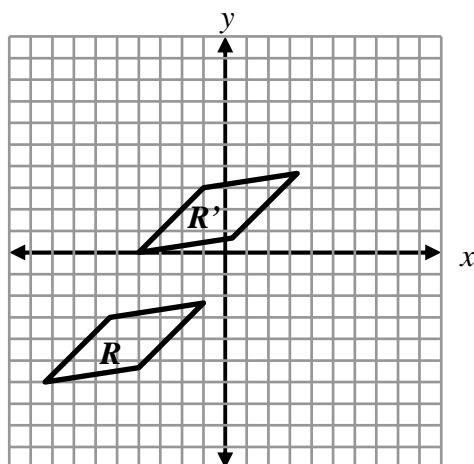
C



B

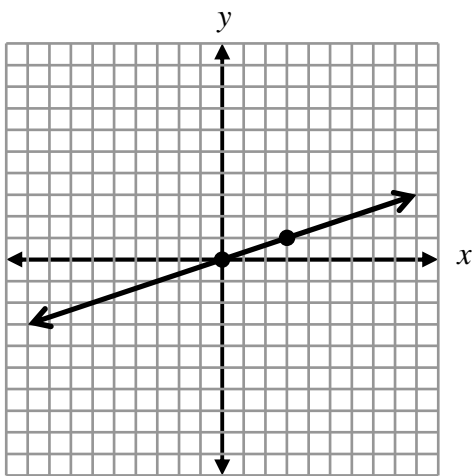


D

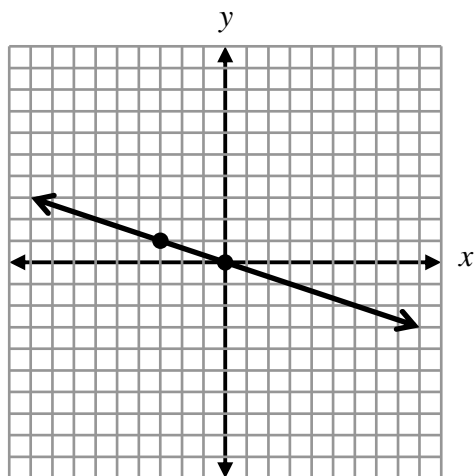


22 Which of these lines has a slope of -3?

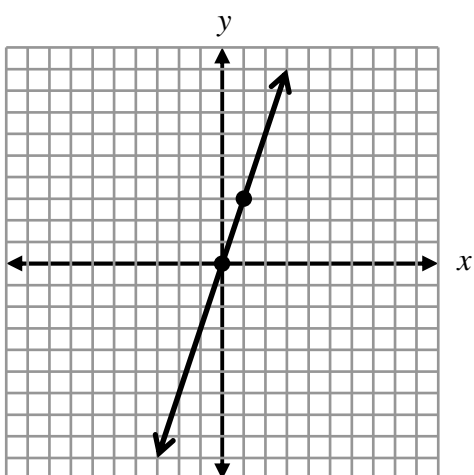
A



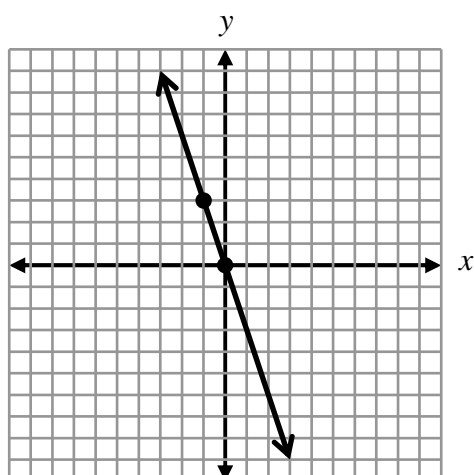
C



B



D



- 23** Marissa and Jimena each conducted 75 trials of the same experiment at the miniature golf course.

- The bucket had only green, red, and yellow golf balls.
- Each girl randomly selected golf balls from a bucket.
- Each girl recorded the color of the golf ball, replaced it, and then chose another golf ball.

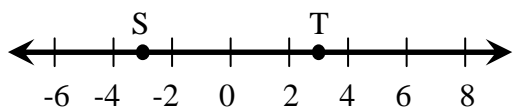
Results

Name	Green	Red	Yellow
Marissa	30	38	7
Jimena	29	36	10

Which statement is **best** supported by these results?

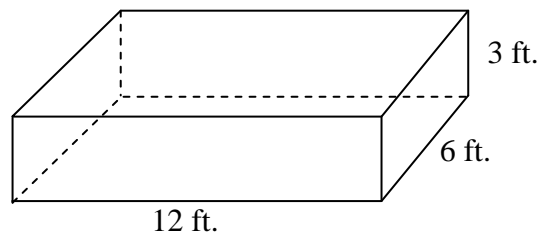
- A** There are more green balls in the bucket than yellow balls.
- B** There are twice as many red balls in the bucket than green balls.
- C** There is the same number of green, red, and yellow balls in the bucket.
- D** There is the same number of green and red balls in the bucket.

- 24** Which is **closest** to the distance between points S and T?



- A** 0
- B** 3
- C** 6
- D** 7

- 25** What is the volume, in cubic feet, of the right rectangular prism below?



- A** 216 ft.^3
- B** 108 ft.^3
- C** 54 ft.^3
- D** 21 ft.^3

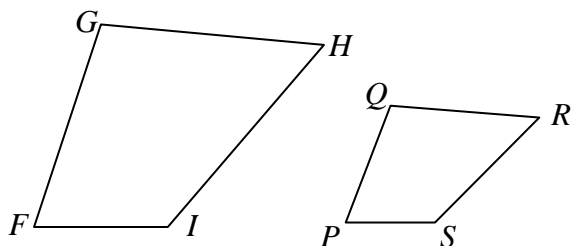
- 26** Aftyn bought 17 pens that cost \$0.53 each. She used a calculator to find the total cost. Her calculator display is shown below.

18.02

Which statement is true?

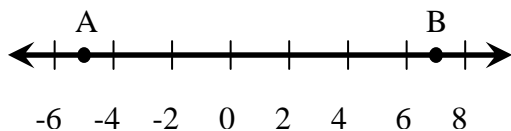
- A** The number displayed is reasonable because calculators do not make mistakes.
- B** The number displayed is reasonable because it is more than 17.
- C** The number on the display is unreasonable because 20 times \$0.50 is only \$10.00.
- D** The number on the display is unreasonable because it should be greater than \$18.02.

- 27 Quadrilateral $FGHI$ is similar to quadrilateral $PQRS$.



Which of the following statements is true?

- A $\angle I \cong \angle Q$
B $\angle G \cong \angle S$
C $\angle P \cong \angle G$
D $\angle H \cong \angle R$
- 28 Which is **closest** to the value of the midpoint between points A and B?



- A 0
B 1
C 2
D 3

- 29 The chart below shows the approximate distances of various towns and cities from Williams.

Town or City	Distance (miles)
Ash Fork	19
Drake	36
Flagstaff	28
Red Lake	9
Seligman	42
Kingman	117
Parks	14

Which is **closest** to the mean of the seven distances listed in the chart?

- A 9 miles
B 28 miles
C 38 miles
D 40 miles
- 30 Alyce has 36 marbles in a bag, all the same size and shape. There are 12 red, 14 blue, and 10 yellow marbles in the bag. She will select a marble from the bag at random.

What is the probability that the marble Alyce selects will be red?

- A $\frac{1}{3}$
B $\frac{1}{36}$
C $\frac{7}{18}$
D $\frac{5}{18}$

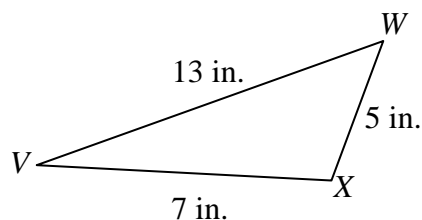
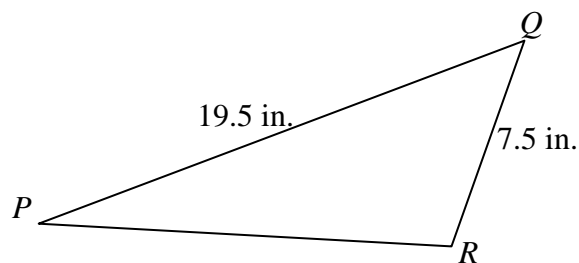
- 31** Read the statement below.

If you play in the jazz band, then you also play in the concert band.

Which conclusion is valid?

- A** All members of the concert band play in the jazz band.
- B** No members of the jazz band play in the concert band.
- C** No members of the concert band play in the jazz band.
- D** All members of the jazz band play in the concert band.

- 32** Triangle PQR is similar to triangle VWX .

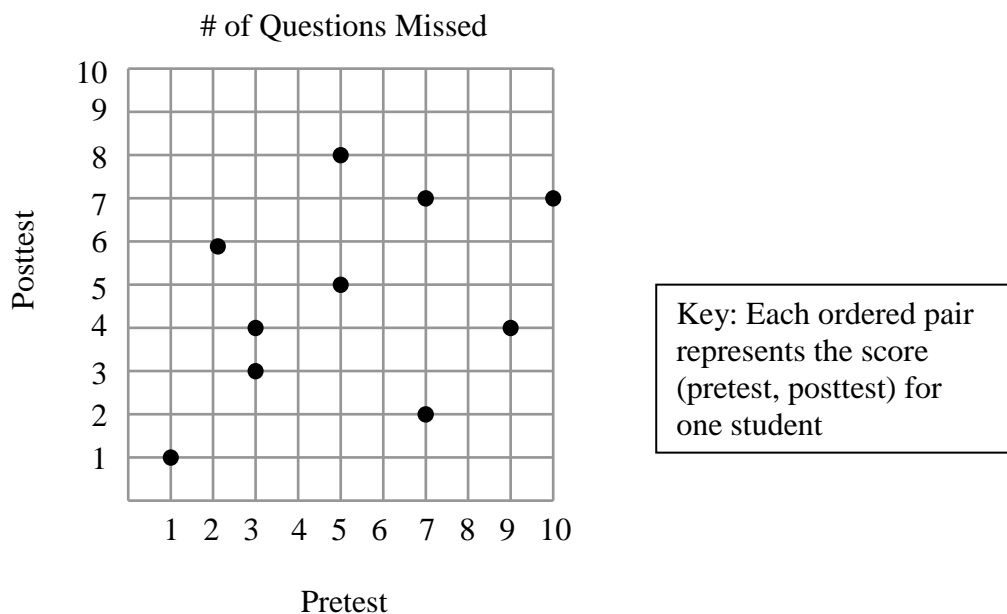


What is the length of \overline{PR} ?

- A** 7.5 in.
- B** 9.5 in.
- C** 10.5 in.
- D** 13.5 in.

AIMS Sample Test – Mathematics
Grade 8

- 33** Ms Sandy made a scatterplot to compare the number of questions each student missed on their pretest and their posttest, as shown in the graph below.

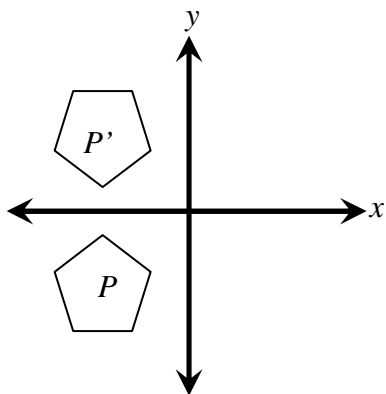


How many of Ms. Sandy's 10 students missed the same number of questions on both tests?

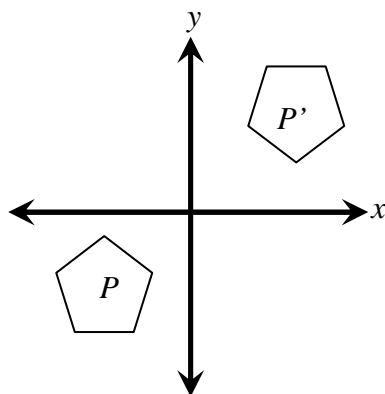
- A** 2
- B** 4
- C** 8
- D** 10

34 Which figure is a reflection of figure P in respect to the x -axis?

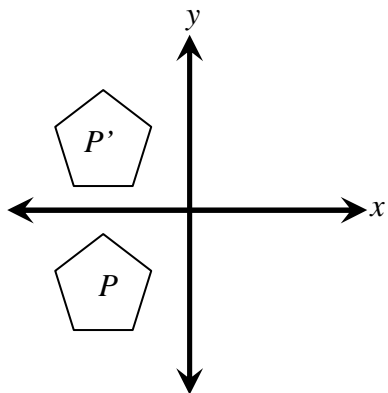
A



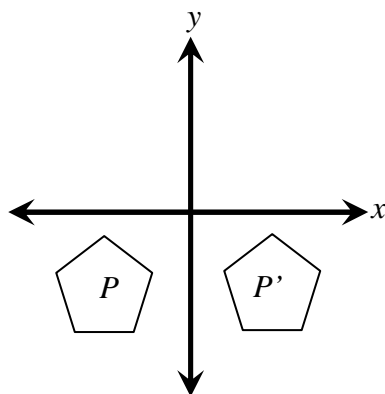
C



B



D



AIMS Sample Test – Mathematics Answer Key
Grade 8

Item Number	Correct Answer	Performance Objective
1	A	1-1-1
2	B	1-2-2
3	C	2-1-4
4	C	2-4-1
5	B	3-3-4
6	D	3-1-1
7	B	4-1-6
8	B	1-1-2
9	D	3-1-2
10	C	4-1-8
11	A	1-2-10
12	B	2-3-1
13	C	3-3-1
14	B	2-1-5
15	B	3-2-1
16	D	5-2-1
17	C	3-3-2
18	D	3-3-9
19	D	1-3-1
20	A	3-2-2
21	A	4-2-2
22	D	3-4-1
23	A	2-2-7
24	C	4-3-3
25	A	4-4-2
26	C	1-3-4
27	D	4-1-10
28	B	4-3-2
29	C	2-1-6
30	A	2-2-3
31	D	5-2-2
32	C	4-4-7
33	B	2-1-9
34	A	4-2-1