AIMS Grade 7 Mathematics Sample Test and Think-Throughs

FOR STUDENTS

GRADE 7

Arizona Department of Education
Tom Horne, Superintendent of Public Instruction

Directions: Read each problem and select the best answer.

1 A microwave oven is on sale for 20% off the regular price. The sale price is $250.00. What is the regular price of the microwave oven?

  A $166.67

  B $200.00

  C $300.00

  D $312.50

2 If two parallel lines are cut by a non-perpendicular transversal, which type of angles are **not** congruent?
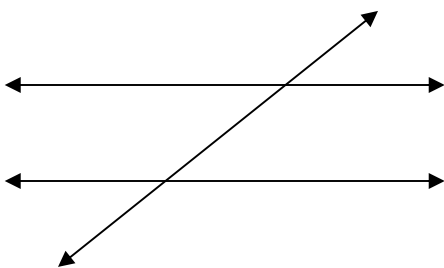
  A corresponding angles

  B alternate interior angles

  C alternate exterior angles

  D same-side interior angles

3 The circumference of a circle measures 12.56 inches. What is the measure of the radius of the circle?

  A 2 inches

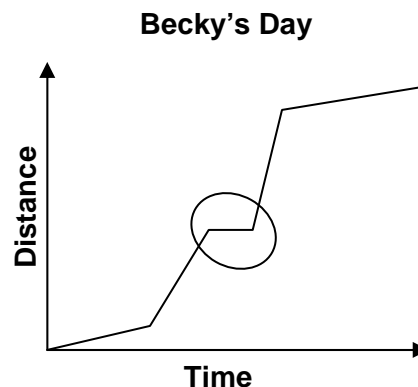 **B** 3.14 inches

  C 4 inches

  D 6.28 inches

4 The number of students (class size) in each of 7 classes is shown below.

15, 25, 25, 29, 31, 32, 37

Which class size affects the range of all 7 classes the most?

  A 15

  B 25

  C 29

  D 32

5 Becky created the line graph below to show the distance she traveled during one day.

Becky's Day

Which activity could be represented by the circled portion of the line?

  A driving to the park

  B walking in the park

  C driving to the library

  D studying in the library

Go On▶

6   For which of the following would the use of a table of values **not** be helpful?

    A   Determine the results of a probability experiment.

    B   Find the 10th term in the number pattern 2, 5, 7, 12, …

    C   Find the area of a trapezoid with the dimensions b_1=10, b_2=15, h=4.

    D   Determine the mean number of books checked out from a library per day for 30 days.

7   The Venn diagram below shows the number of students in a class who have visited the Grand Canyon, Carlsbad Caverns, or both. There are 34 students in the class, and all of the students have visited at least one of the locations.
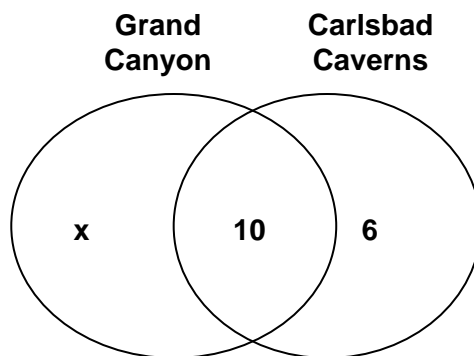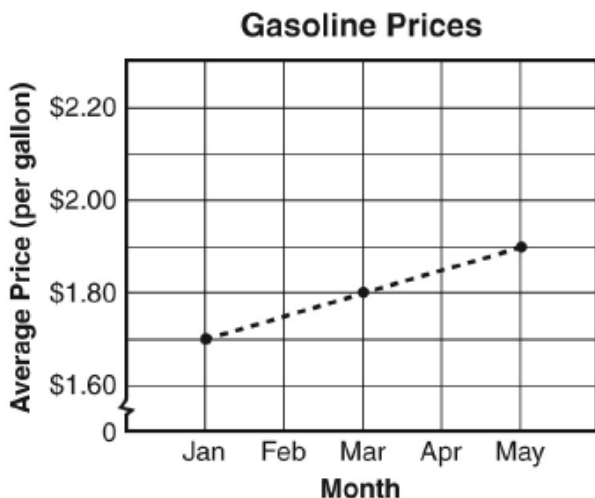

What is the number of students, x, who have only visited the Grand Canyon?

    A $x = 16$

    B $x = 18$

    C $x = 24$

    D $x = 28$

8   What is the value of the expression when $x = 5$ and $y = -2$?

$$\frac{1}{2}y - x$$

    A -3

    B -4

    C -6

    D -7

Go On▶

9 The graph below shows the increase in average gasoline prices from Jan. through May.

Gasoline Prices

If gasoline prices continue to increase at the same rate, what will be the average gasoline price in July of that same year?

A $1.90

B $1.95

C $2.00

D $2.05

10 Max, Owen, Elise, and Cara went to a school carnival. They each played the dart throw, ring toss, water shoot, and basketball throw. Each student won a different game.

Clues:
- Max didn't score any points at the dart throw.
- Elise correctly tossed 2 rings, but did not win the ring toss.
- Cara won a bear for outscoring everyone at the water shoot.
- Owen scored more than anyone at the basketball throw.

Based on the clues, which game did Max win?

A dart throw

B ring toss

C water shoot

D basketball throw

Go On▶

11 Which expression has a value of –3?

    A   –7 – (4)

    B   –4 – (–7)

    C   –7 – (–4)

    D   –4 – (7)

12 Between which two consecutive integers is the value of this irrational number?

$$\sqrt{117}$$

    A   8 and 9

    B   10 and 11

    C   14 and 15

    D   20 and 21

13 Using the results in the tables, what is the probability of a spinner landing on the letter P in both experiments?

Experiment A

Spin	Color
1	B
2	P
3	B
4	W
5	P
6	G
7	G
8	P
9	W
10	B

Experiment B

Spin	Color
1	P
2	P
3	B
4	W
5	W
6	P
7	G
8	P
9	W
10	B

    A $\dfrac{3}{10}$

    B $\dfrac{2}{5}$

    C $\dfrac{3}{25}$

    D $\dfrac{7}{20}$

14 The radius of a circular fish pond is 4 feet. What is the circumference of the pond in terms of π?

    A 4π

    B $4\pi^2$

    C 8π

    D $8\pi^2$

15 On a winter Monday in Prescott, the temperature at 8 a.m. was –8°F. At 1 p.m. it was 27°F. By how many degrees did the temperature change from morning to afternoon?

    A   –35°

    B   –19°

    C   19°

    D   35°

16 Dave's neighbors are going on a trip to Japan. He wants them to bring him a souvenir t-shirt, but Japan has its own unit of currency.
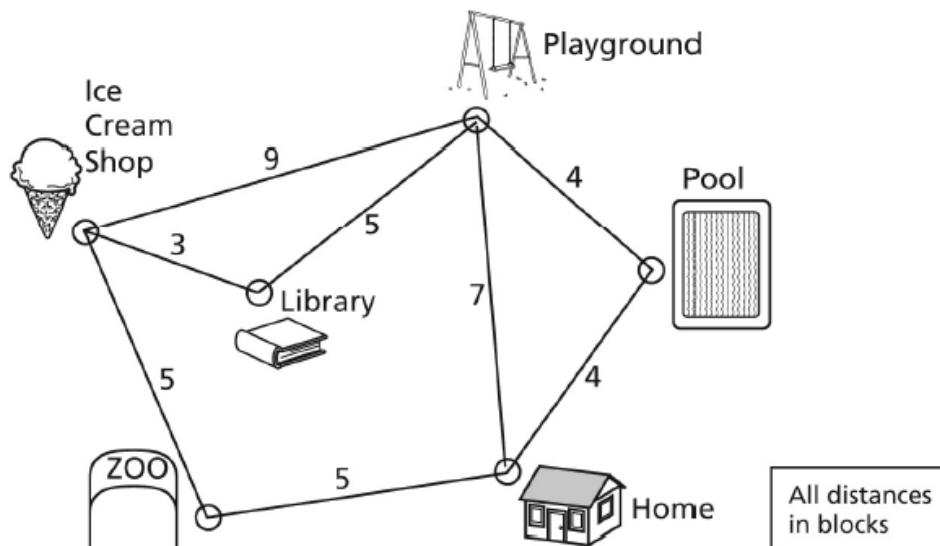
Conversion
1 US dollar = about 94.73 Japanese yen

Dave gives his neighbors $20.00. About how many Japanese yen will Dave's neighbors be able to spend on his t-shirt?

    A   1

    B   5

    C   95

    D   1895

Go On▶

17 Karen wants to visit all of the points of interest near her home. She will leave from her home and then visit each place on her vertex-edge graph only once.

What is the shortest distance that Karen will travel to each site and then return home?

A 21 blocks

B 25 blocks

C 26 blocks

D 27 blocks

18 Ken will conduct a probability experiment by removing a cube from a bag of colored cubes that are all the same size and shape. Ken will use the following procedure.

- Without looking, remove a cube.
- Record its color.
- Put it back in the bag.
- Repeat the experiment.

The probability of drawing a green cube is $\frac{1}{2}$. What is the probability that the first 3 cubes that Ken removes will be green?

A $\frac{1}{8}$

B $\frac{1}{4}$

C $\frac{3}{8}$

D $\frac{3}{2}$

Go On▶

19 Alfredo bought 3 new notebooks for school. He paid $2.49 for all the notebooks. Which equation can be used to find *n*, the cost of each notebook?

A $3n = 2.49$

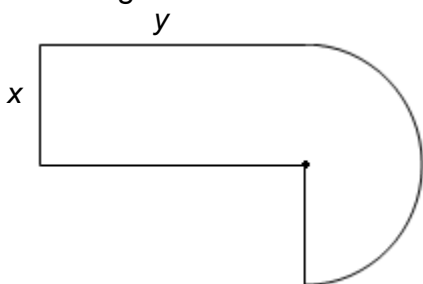**B** $2.49n = 3$

C $2.49 + n = 3$

D $3 + n = 2.49$

20 The table shows a sequence of numbers.

$-\dfrac{1}{3}$	1	−3	9	−27	...

What is the rule for the sequence?

A multiply the preceding term by 3

B divide the preceding term by 3

**C** multiply the preceding term by −3

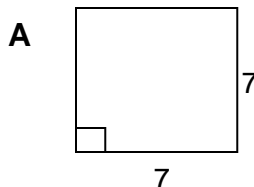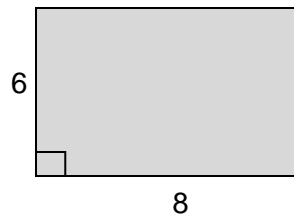**D** divide the preceding term by −3

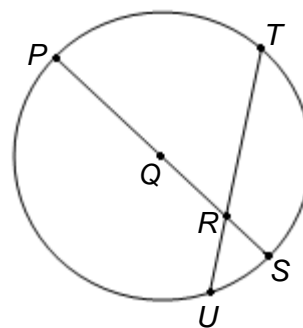**21** Look at the figure.

Which statement can be used to find the total area of the figure?

A find *x* multiplied by *y*, then add to $x^2\pi$

B find 2*x* multiplied by *y*, then add to $x^2\pi$

C find *x* multiplied by *y*, then add that to $\dfrac{x^2\pi}{2}$

D find 2*x* multiplied by *y*, then add that to $\dfrac{x^2\pi}{2}$

22 Which polygon has the same perimeter as the one below?

A

B

C

D
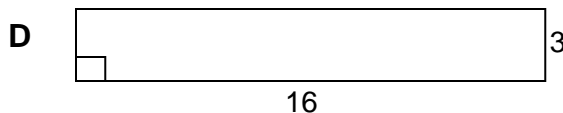
23 Which two points on circle *Q* form an arc?

A *Q* and *R*

B *R* and *S*

C *S* and *T*

D *T* and *R*

Go On▶

24 What is the value of the expression?

$$\left|-3+(-9)\right|$$

A −12

B −6

C 6

D 12

25 What is the solution to the equation?

$$\frac{12(-3)+4}{4}=$$

A −36

B −8

C 3

D 8

26 What is 7.29×10^5 written in standard form?

A 0.00000729

B 0.0000729

C 729,000

D 72,900,000

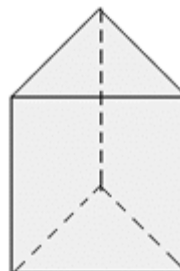**27** Which pair of events is dependent?

A flipping a coin, then flip it again

B rolling a fair cube, then rolling it again

C spinning the arrow of a spinner, then rolling a fair cube

D removing a card from a deck, then removing another one

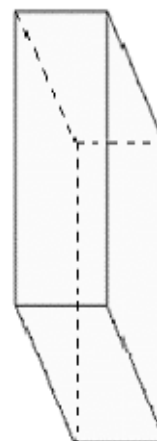**28** Which figure is a right prism with a hexagonal base?

A

B

C

D

Go On▶
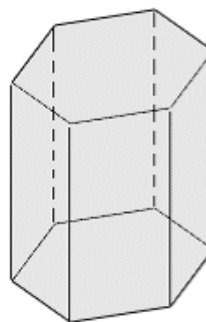
29 Ramon wants to graph his science test scores each week. He will use the graph to determine a trend for his scores based on the days of the week he takes the test. What is the **best** type of graphic display he should use for this?

A line graph

B histogram

C circle graph

D stem-and-leaf plot

30 Which figure shows the triangle below reflected over the *x*-axis, then reflected over the *y*-axis?

A

C

B

D
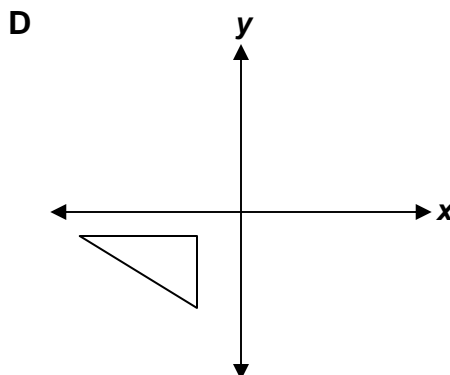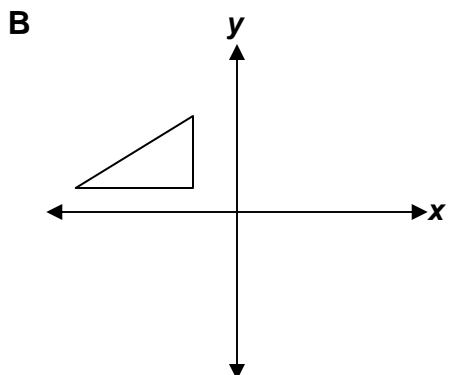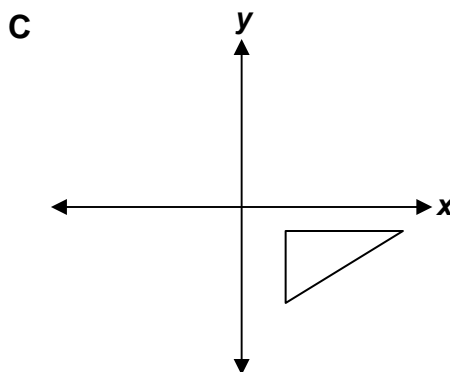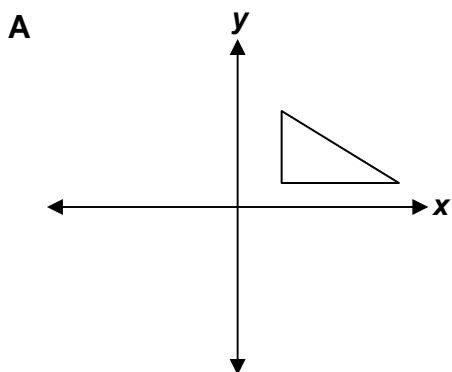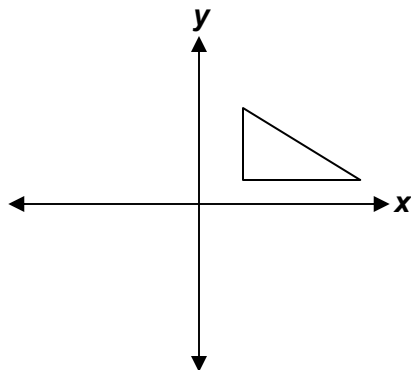
Go On▶

31 Which table of values can be used to graph the equation below?

$$y = 2x + 1$$

A

x	0	1	2	3	4
y	1	3	5	7	9

B

x	-2	-1	0	1	2
y	5	3	1	-3	-5

C

x	-2	-1	0	1	2
y	-5	-1	1	3	5

D

x	0	1	2	3	4
y	0	1	2	3	4

32 Jose is having a party and will invite all of his friends. He will supply the following items for each person.

- 3 slices of pizza
- 2 bottles of sports drink
- 1 piece of cake

What information is needed to make sure that Jose has pizza, sports drink, and cake for each person?

A How much is the cake?

B How much is each pizza?

C How many people like sports drink?

D How many people will be at the party?

33 What is the solution to the equation?
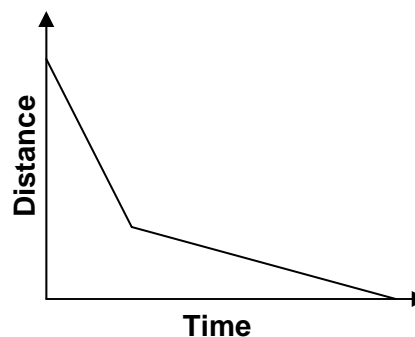
$$\frac{7}{2}x - 2 = 28 - 4x$$

A $x = 0$

B $x = \frac{2}{7}$

C $x = 4$

D $x = 7$

34 What situation could the graph **best** represent?

A a kite flying in the air

B a tennis ball falling off a table

C a sky diver jumping from an airplane

D a bungee jumper jumping from a bridge

AIMS Grade 7 Mathematics Sample Test Answer Key

The answer key below shows you the Strand, Concept, and Performance Objective that each item is addressing. This will help you to identify which Concepts from the AZ Academic Mathematics Standards that you may need to study more.

1	1.2.3	**D**		**18**	2.2.1	**A**
2	4.1.2	**D**		**19**	3.3.1	**A**
3	4.4.1	**A**		**20**	3.1.1	**C**
4	2.1.3	**A**		**21**	5.1.1	**C**
5	5.2.7	**D**		**22**	4.4.2	**A**
6	5.2.5	**C**		**23**	4.1.1	**C**
7	2.3.2	**B**		**24**	1.1.4	**D**
8	3.3.2	**C**		**25**	1.2.1	**B**
9	3.4.1	**C**		**26**	1.2.4	**C**
10	5.2.9	**B**		**27**	2.2.2	**D**
11	1.2.1	**C**		**28**	4.1.3	**A**
12	1.3.3	**B**		**29**	2.1.1	**A**
13	2.2.1	**C**		**30**	4.2.1	**D**
14	4.4.1	**C**		**31**	3.2.1	**A**
15	1.1.4	**D**		**32**	5.2.3	**D**
16	1.3.4	**D**		**33**	3.3.3	**C**
17	2.4.1	**C**		**34**	3.4.1	**C**