1 **Which of the following is true?**

A –10 + 14 = 4

B –14 ÷ 10 = 1.4

C 10 – 14 = 4

D 14 × (–10) = 140

2 **Which number is a square root of 400?**

A 400

B 200

C 40

D 20

3 **What is 0.000012 written in scientific notation?**

A 1.2×10^{-5}

B 1.2×10^{-4}

C 1.2×10^{4}

D 1.2×10^{5}

4 Directions: Click and drag each selected number to the correct box.

Arrange the three numbers shown in order from least to greatest.

Least

↓

Greatest

4.7×10^{5}

5.2×10^{5}

3.9×10^{8}

5 Which list of numbers is arranged from least to greatest?

A 0.25, 17%, $\frac{2}{9}$

B 0.25, $\frac{2}{9}$, 17%

C 17%, 0.25, $\frac{2}{9}$

D 17%, $\frac{2}{9}$, 0.25

6

What is the value of (−15) − (−18) ÷ 3 ?

7 Which number is a square root of 1?

A $\frac{1}{4}$

B $\frac{1}{2}$

C 1

D 2

8 Let *n* represent any number in this sequence.

$$2, 24, 46, 68, . . .$$

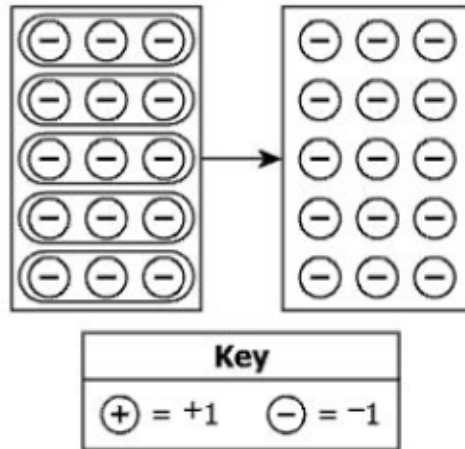Which of these can be used to determine the next number?

A $\frac{n}{12}$

B 12*n*

C *n* + 22

D *n* − 22

9 Which number sentence is represented by this model?

Key
⊕ = +1   ⊖ = ⁻1

A –3 • 5 = 15
B –3 • 5 = –15
C –3 • (–5) = 15
D –3 • (–5) = –15

10 Clarence made a scale drawing of a classroom. The scale in the drawing is 2 inches represents 9 feet. The actual length of the classroom is 36 feet. What is the length of the classroom on the scale drawing?

A 4 inches
B 8 inches
C 27 inches
D 162 inches

11 Which fraction and decimal are equivalent to 10^{-3} ?

A $\dfrac{-1}{10^3}$ and –0.003

B $\dfrac{1}{10^3}$ and –0.003

C $\dfrac{-1}{10^3}$ and 0.001

D $\dfrac{1}{10^3}$ and 0.001

12 **What is the absolute value of –8.2 ?**

    A 8.2

    B 4.1

    C –4.1

    D –8.2

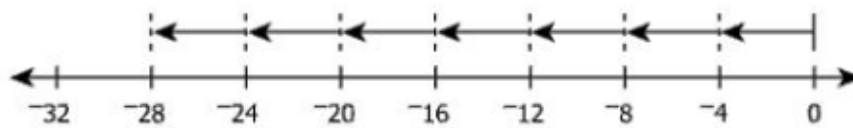**13** **Which statement is true about the pattern shown?**

$$5, 20, 80, 320, \ldots$$

    A The common ratio is 4.

    B The common ratio is 15.

    C The common difference is 4.

    D The common difference is 15.

14 **Kelly received a 25% discount on the purchase of a $240 bicycle. What was the amount of the discount Kelly received?**

    A $25

    B $60

    C $180

    D $215

15 **Which number sentence is represented by this model?**

    A –4 • 7 = 28

    B –4 • 7 = –28

    C 4 • (–7) = 28

    D 4 • (–7) = –28

16

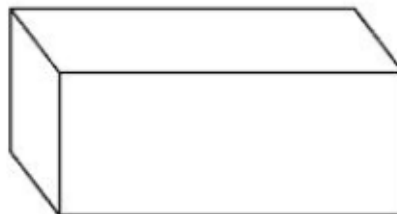What is $\left|\dfrac{-11}{12}\right|$?

A $\dfrac{12}{11}$

B $\dfrac{11}{12}$

C $\dfrac{-11}{12}$

D $\dfrac{-12}{11}$

17 **The length of Rectangular Prism A is shown.**

6 in.

Rectangular Prism A

The length of this prism is multiplied by a scale factor of $\dfrac{1}{2}$ to create Rectangular Prism B. The volume of Rectangular Prism B is —

A 2 times the volume of Rectangular Prism A

B 3 times the volume of Rectangular Prism A

C $\dfrac{1}{4}$ the volume of Rectangular Prism A

D $\dfrac{1}{2}$ the volume of Rectangular Prism A
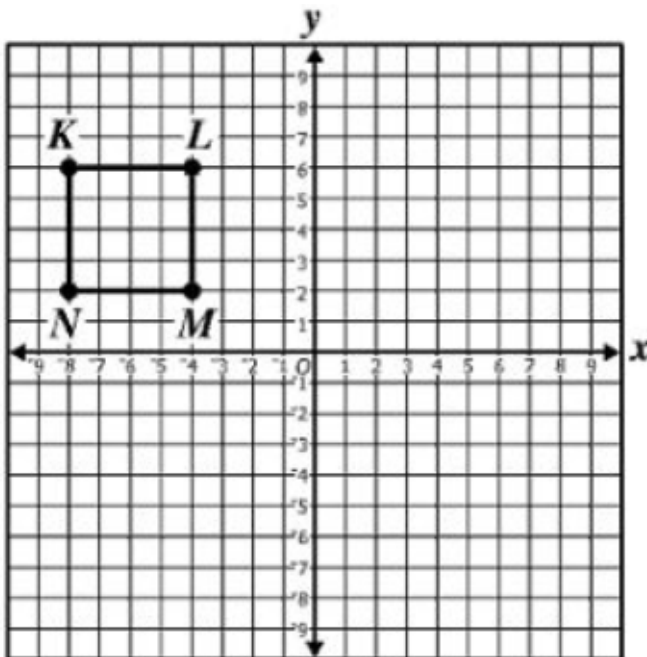
18 **Which statement is false?**

A All squares are rectangles.

B All squares are parallelograms.

C All rhombuses are squares.

D All rhombuses are parallelograms.

Quadrilateral *KLMN* is rotated 180° clockwise about the origin. Which coordinates best represent the image of point *K*?

A (6, 8)

B (−4, 2)

C (8, −6)

D (4, −2)

Directions: Click on a box to choose each answer you want to select. You must select all correct answers.

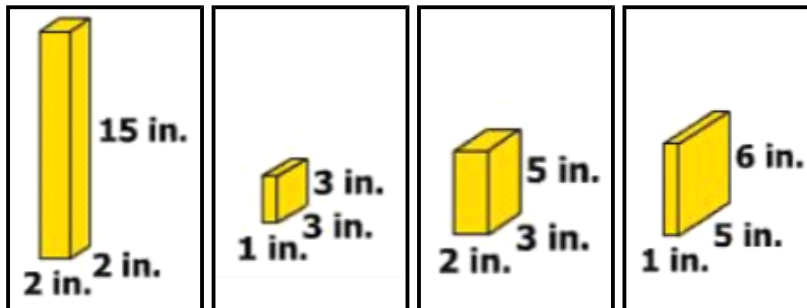**Triangle *STV* and triangle *ZXY* are similar. Which pair of segments are corresponding sides of these triangles?**
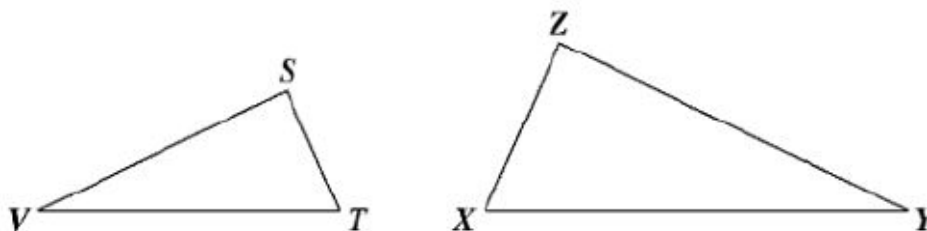
| $\overline{ST}$ and $\overline{ZX}$ | $\overline{TV}$ and $\overline{XY}$ | $\overline{VT}$ and $\overline{ZX}$ | $\overline{TV}$ and $\overline{XZ}$ | $\overline{XY}$ and $\overline{SV}$ | $\overline{SV}$ and $\overline{ZY}$ |

21

The dimensions of 4 rectangular prisms are shown. Identify each of the prisms for which the maximum amount of sand the prism can hold is 30 cubic inches.

15 in.

2 in. 2 in.

3 in.
3 in.
1 in.

5 in.
3 in.
2 in.

6 in.
5 in.
1 in.

22 **A rectangular prism has a height of 3 inches and a volume of 27 cubic inches. The height of this prism is changed to 6 inches, and the other dimensions stay the same. What is the volume of the prism with this change?**

A 30 cubic inches

B 54 cubic inches

C 81 cubic inches

D 162 cubic inches

23 **Every rhombus is also a —**

A parallelogram

B trapezoid

C rectangle

D square

24 **Quadrilateral *PQMN* is similar to quadrilateral *WXYZ*.**

M 115° *N* 100°

65° 80°

Q *P*

Z *W*

Y *X*
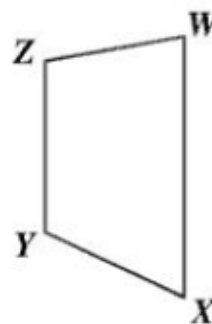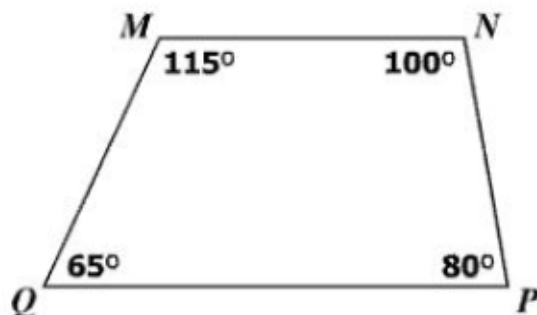
What is the measure of angle *Z*?

A 65°

B 80°

C 100°

D 115°

25 **This table shows the dimensions of four rectangular prisms.**

Rectangular Prism Dimensions

Rectangular Prism	Length (in feet)	Width (in feet)	Height (in feet)
Q	8	4	5
R	6	7	12
S	4	10	12
T	2	13	5

Which rectangular prism has the greatest volume?

A Rectangular Prism Q
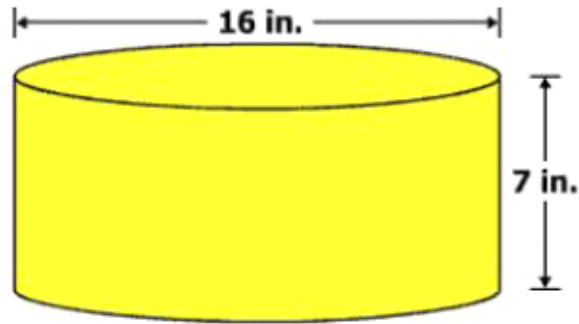B Rectangular Prism R
C Rectangular Prism S
D Rectangular Prism T

26 **Which numbered triangle is a 90° counterclockwise rotation about the origin of the shaded triangle?**
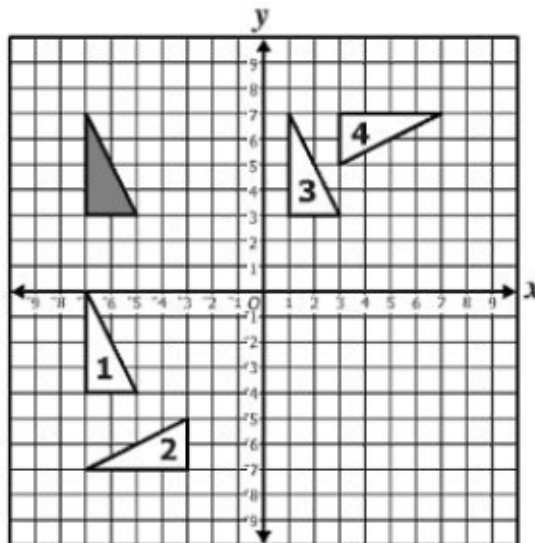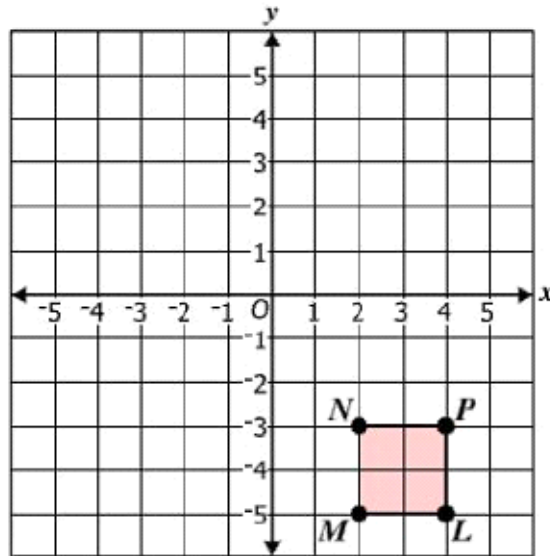

A Triangle 1
B Triangle 2
C Triangle 3
D Triangle 4

27 The diameter and height of a cylindrical container are shown.

16 in.

7 in.

The container is filled completely with cheese sauce. Which of these represents the total number of cubic inches of cheese sauce in the container?

A $\pi \bullet 8^2 \bullet 7$

B $\pi \bullet 16^2 \bullet 7$

C $2\pi \bullet 8^2 + 2\pi \bullet 8 \bullet 7$

D $2\pi \bullet 16^2 + 2\pi \bullet 16 \bullet 7$

28

Figure *LMNP* will be reflected across the *y*–axis. Identify the *x* and *y* coordinates for *N'*.

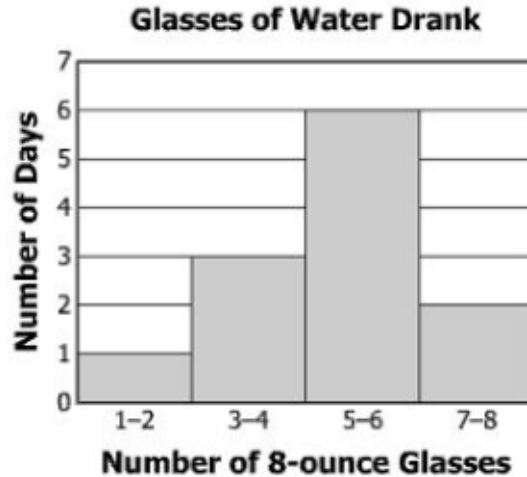| $x = -3$	$x = 2$	$y = -3$	$y = 2$
$x = -2$	$x = 3$	$y = -2$	$y = 3$

29 Triangle *PQR* is similar to triangle *STU* .
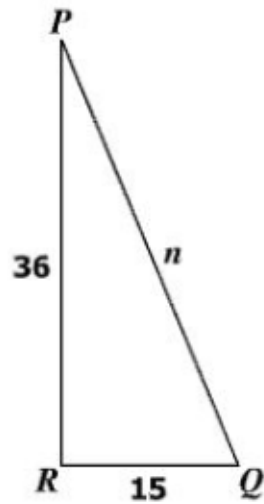
Which proportion can be used to find *n* ?

A $\dfrac{5}{15} = \dfrac{n}{12}$

B $\dfrac{15}{5} = \dfrac{n}{12}$

C $\dfrac{13}{n} = \dfrac{12}{36}$

D $\dfrac{13}{n} = \dfrac{36}{12}$

30 The number of 8–ounce glasses of water Shane drank each day for 12 days is represented in this histogram.

Glasses of Water Drank

Number of Days

Number of 8-ounce Glasses

Based on this histogram, which statement must be true?

A On exactly 2 of these days, Shane drank 1 to 2 glasses of water.
B On exactly 3 of these days, Shane drank 7 to 8 glasses of water.
C On exactly 25% of these days, Shane drank 3 to 4 glasses of water.
D On exactly 60% of these days, Shane drank 5 to 6 glasses of water.

31 The digits 1, 2, 3, and 4 are used to make a 3–digit number. Each digit can be repeated. What is the total number of 3–digit numbers that can be made using these digits?

A 12
B 27
C 64
D 81

32 If $k = 2$, what is the value of $k^3 - (k - 10) + 4k$?

A 6
B 8
C 22
D 24

33 A spinner has 5 sections of equal size labeled P, Q, R, S, and T. The arrow of this spinner was spun 15 times and landed 4 times on the section labeled Q.
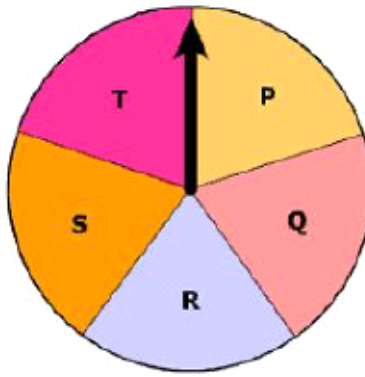
Which statement best describes the experimental probability and theoretical probability of the arrow landing on the section labeled Q?

A The experimental probability is $\frac{1}{5}$, and the theoretical probability is $\frac{1}{5}$.

B The experimental probability is $\frac{1}{5}$, and the theoretical probability is $\frac{4}{15}$.

C The experimental probability is $\frac{4}{15}$, and the theoretical probability is $\frac{1}{5}$.

D The experimental probability is $\frac{4}{15}$, and the theoretical probability is $\frac{4}{15}$.

34 Ethan earns $12 per hour to walk 2 dogs, plus an additional $7 for brushing the 2 dogs after their walk.

- •Let *x* represent the hours Ethan works.
- •Let *y* represent the total he earns each day.

Which number sentence best represents this situation?

A $12x + 2 + 7 = y$
B $12x \cdot 2 + 7 = y$
C $12x + 7 = y$
D $12x - 7 = y$

35 Aidan's age is 6 years less than half of Maggie's age. Aidan's age is 4 years. What is Maggie's age?

A 2 years
B 5 years
C 10 years
D 20 years

36 **What is the solution to $-12x \leq -72$?**

A $x \geq 6$

B $x \leq 6$
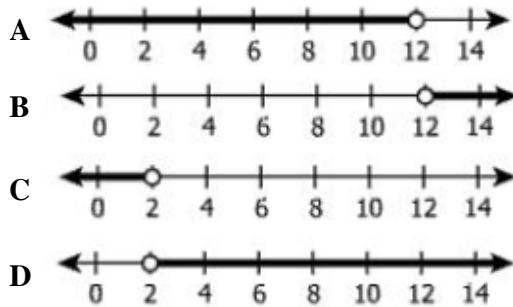
C $x \geq -6$

D $x \leq -6$

37

Which property is illustrated by this number sentence?

$$(-1 \bullet 7) + 3 = 3 + (-1 \bullet 7)$$

Associative Property of Addition	Commutative Property of Addition	Distributive Property
Associative Property of Multiplication	Commutative Property of Multiplication	Multiplicative Identity Property

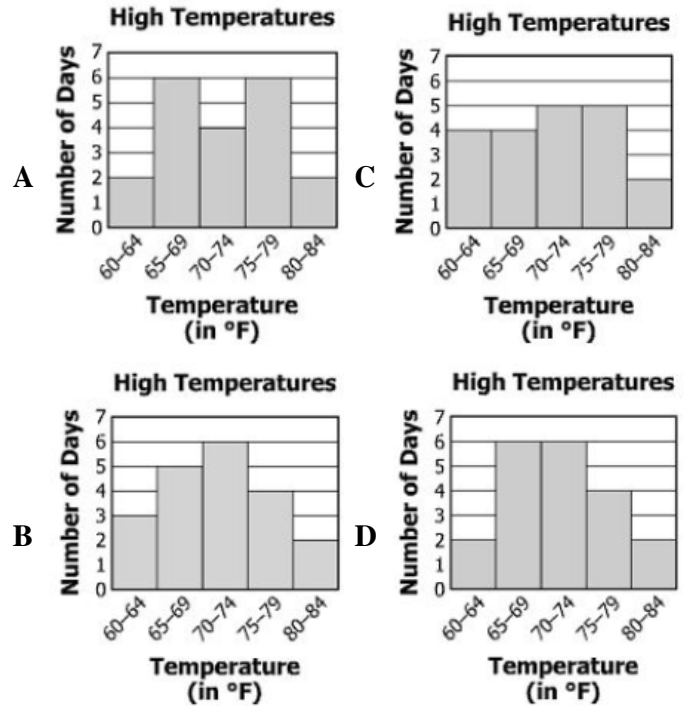**38** **Which graph represents the solution set to this inequality?**

$$x + 5 < 7$$

A

B

C

D

39

This stem–and–leaf plot shows the high temperatures for a city over 20 days.

Which histogram represents the same set of data?

High Temperatures

Stem	Leaf
6	2 4 5 7 7 7 8 8
7	0 0 1 1 4 4 5 5 7 8
8	0 2

Key
6|1 means 61°F

A

High Temperatures

C

High Temperatures

B

High Temperatures

D

High Temperatures

40 Marjorie bought 24 bottles of juice. Each day she opens and drinks 2 of these bottles of juice. Which of the following best represents the number of unopened bottles of juice Marjorie has at the end of d days?
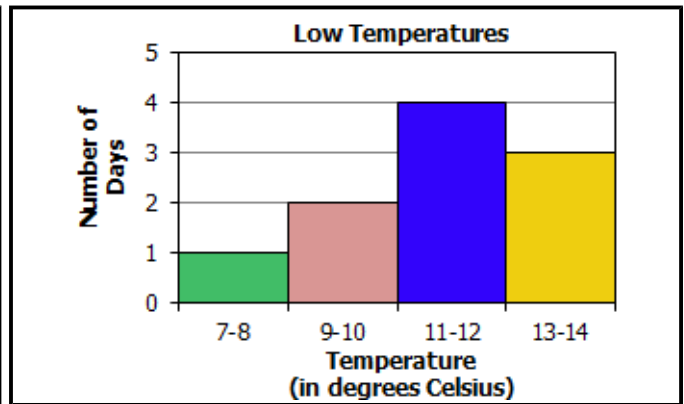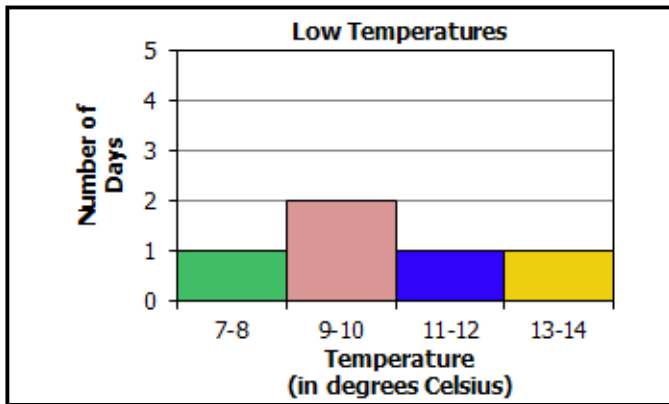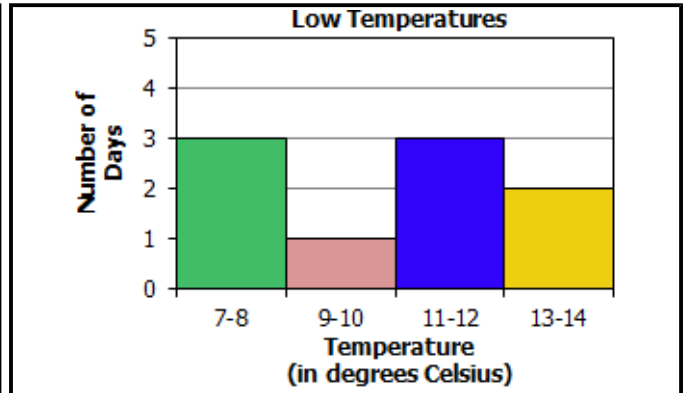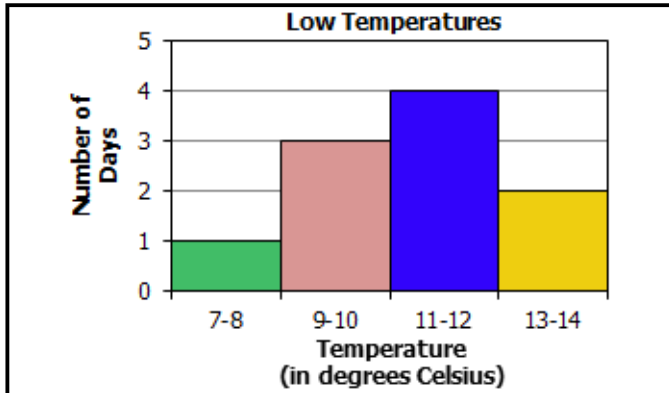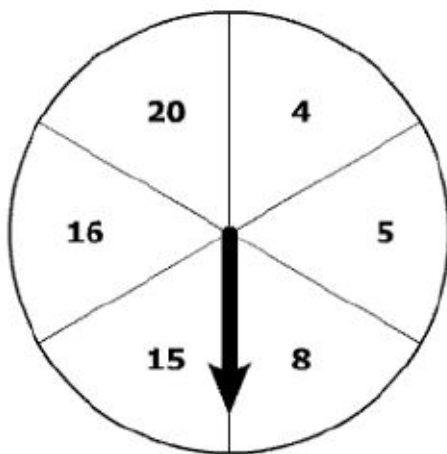
A $2d - 24$

B $24d - 2$

C $24 + 2d$

D $24 - 2d$

41

Scott recorded the low temperature in Richmond each day for 10 days. This list shows the temperatures in degrees Celsius.

8°, 12°, 11°, 9°, 9°, 12°, 10°, 14°, 13°, 12°

Identify the histogram for this set of data.

42

This spinner has 6 sections of equal size.

The arrow of this spinner was spun 60 times. On 45 out of 60 times, the arrow landed on a section labeled with a multiple of 4. What was the experimental probability of the arrow landing on a section with a multiple of 4 ?

A $\dfrac{1}{3}$

B $\dfrac{1}{2}$

C $\dfrac{2}{3}$

D $\dfrac{3}{4}$

43

What is the solution to $\dfrac{x}{-4} = 10$?

A −40

B −6

C 6

D 40

44 Which of the following is the algebraic form for the verbal statement shown?

"13 more than the product of 4 and a number, *n* "

A $\dfrac{n}{4} + 13$

B $4n + 13$

C $4(n + 13)$

D $13(n + 4)$

45 The table shows the results of 50 rolls of a fair number cube numbered 1 to 6.

Number	Frequency
1	8
2	9
3	5
4	15
5	2
6	11

According to the data in the table, what was the experimental probability of rolling a 1?

A $\dfrac{4}{25}$

B $\dfrac{1}{6}$

C $\dfrac{9}{50}$

D $\dfrac{1}{5}$

46 A spinner has sections labeled W, X, Y, and Z. The faces of a number cube are labeled 1, 2, 3, 4, 5, and 6. What is the total number of possible outcomes of 1 spin of the arrow on the spinner and 1 roll of the number cube?

A 6

B 10

C 24

D 48

47 Which value of k makes $-5 > k + 11$ true?

A 8

B -4

C -16

D -22

48 Which table contains only the points that lie on the line represented by $y = \dfrac{5}{4}x - 3$?

A

x	y
-2	0.5
4	8

C

x	y
-1	2.2
5	7

B

x	y
-1	-3.8
5	1

D

x	y
-2	-5.5
4	2

49 What is the value of n that makes the following true?

$$n + (-7) = -77$$

A -84

B -70

C 84

D 70

50 What is the solution to $c - 14 < 16$?

A $c < 2$

B $c > 2$

C $c < 30$

D $c > 30$