THIRD SPACE
LEARNING

8th Grade Virginia State Practice Math Test

Virginia Practice Test Grade 8

Grade 8

Questions

Name: ....

Class: ....

Date: ....

Score: ....

Unit 1

15 questions

Calculators are permitted.

1 Select the numbers that are classified as integers.

    A. -8

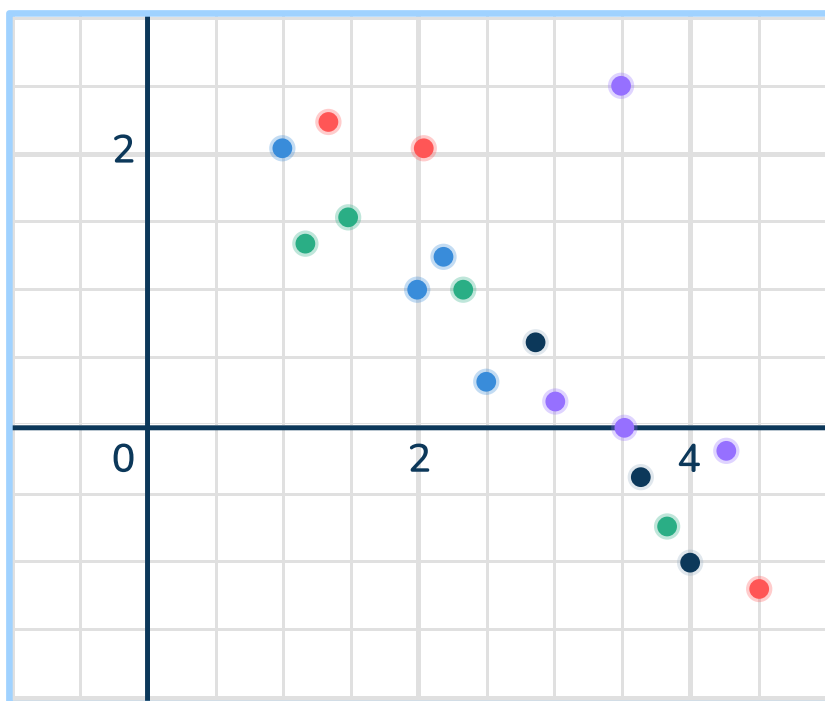   B. $-\dfrac{2}{7}$

    C. 6

    D. -4.3

    E. 0

2 Solve the equation for p. Place your answer in the space provided.

$$\sqrt[3]{p} = 8$$

Value of p

**3** The graph below is a scatter plot. Which statement about the scatter plot is **NOT** true?

A. In general, x and y have a negative association

B. The relationship between x and y looks linear.

C. There appears to be 1 outlier.

D. The line of best fit will have a positive slope.

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4 Solve the equation, use the space to show your work.
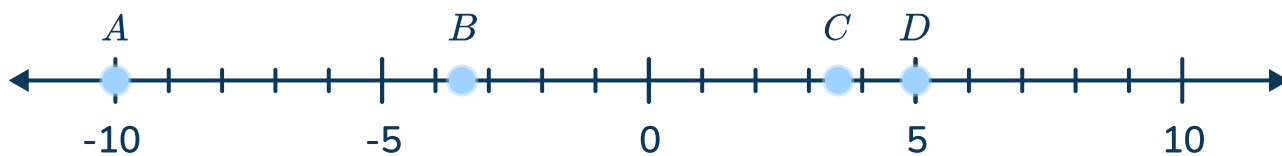
$$-2.5\ (x - 2) = -1.5x + 1.5$$

✎ Answer

5 Which equation represents the line on the coordinate plane?
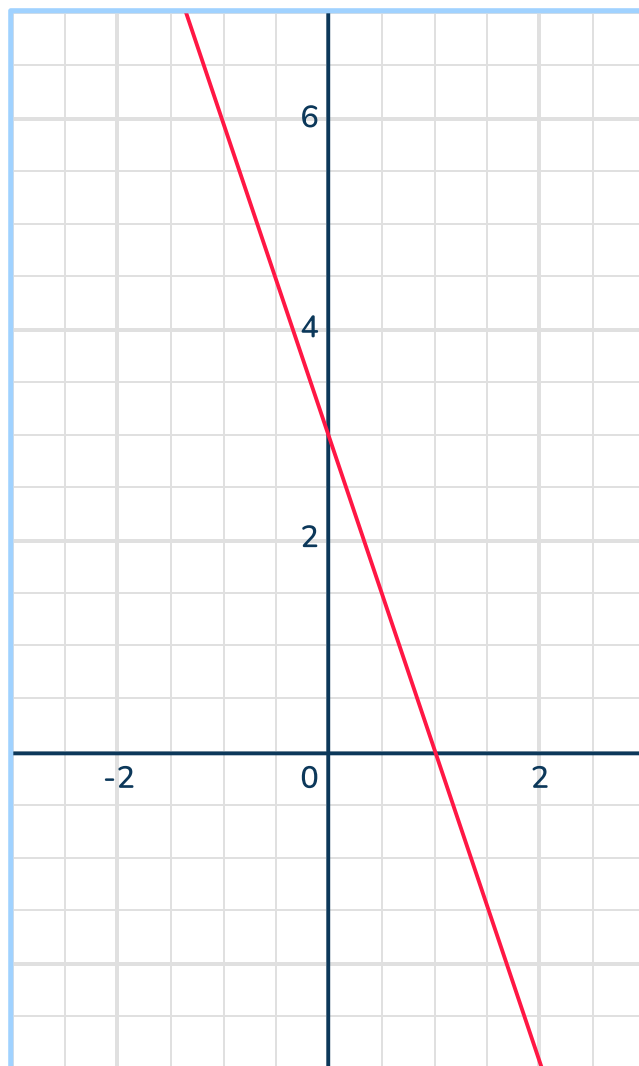
A. $y = 3x - 3$

B. $y = -\dfrac{1}{3}x + 8$

C. $y = \dfrac{1}{3}x - 3$

D. $y = -3x + 3$

6 Which point is closest to $\sqrt{10}$?

7 Identify the domain and the range of the set below.
{(5, 4), (-2, 6), (0, 2)}

Domain:_____

Range:_____

8 The girls soccer team is doing a car wash fundraiser to raise money for their tournament in Florida. Which of the following represents the independent variable in this situation?

    A. The total money raised

    B. The girls on the soccer team

    C. The number of cars washed

    D. The amount travel to the tournament to Florida costs

---

9 Jo runs her family's plumbing business. The table below shows what the service charges for the amount of hours worked. Which linear equation represents the information in the table?

Hours worked, x	Total amount of money charged, y
0	$75
2	$165
4	$255
6	$345

    A. $y = 45x + 75$

    B. $y = 90x + 75$

    C. $y = 90x$

    D. $y = 45x$

10 The figure below shows a right circular cylinder and right circular cone. The cylinder and the cone have the same base and the same height.

r = 6 ft

h = 4 ft

r = 6 ft

h = 4 ft

Find the volume of the cylinder and the cone.

✎ Answer

What is the ratio of the cone's volume to the cylinder's volume?
Write your answer as a simplified fraction in the space below.

✎ Answer

11 Billy has 6 blue marbles, 3 red marbles, and 11 yellow marbles. What is the probability that Billy will select a blue marble?

Place your answer on the space:_____

Plot the probability on the line below.

0   1

---

12 Select the angles that are complementary.

A.

32   68

B.

25   155

C.

42   48

D.

120   20

13 Which equation represents the graph of a line on the coordinate plane that has an x-intercept of (2, 0) and a y-intercept of (0, 8)?

A. $y = 4x - 8$

B. $y = -4x + 8$

C. $y = -\dfrac{1}{4}x + 8$

D. $y = \dfrac{1}{4}x - 8$

---

14 The table below represents a partially completed input- output table.

Complete the table with the correct values so that it represents a function.

Input	Output
2	5
?	7
6	?
?	?

15 Triangle ABC has point B(-4, 5). If triangle ABC is reflected over the x-axis, to form triangle A'B'C', what would be the coordinate of B'?

   A. B'(4, 5)
   B. B'(-4, -5)
   C. B'(4, 5)
   D. B'(-4, 5)

Unit 2
20 questions
**You are permitted to use calculators.**

1 The price of a car went from $32,000 down to $25,000. What is the approximate percent of decrease? Use the space below to show your work and write your answer.

> ✎ Answer

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2 Quadrilateral ABCD has points A(-4, 3), B(-4, -2), C(3, 3), and D(3, -2). The quadrilateral is reflected over the line $y = x$. What are the points of the image?

> ✎ Answer

3 Identify the pairs of angles using the figure below.
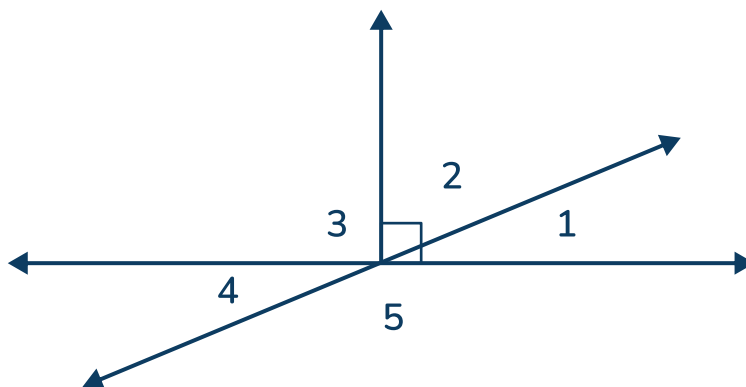
Complementary angles:_____

Supplementary angles:_____

Vertical angles:_____

Adjacent angles:_____

4 The volume of a square based pyramid is 1470 ft³. If the height of the pyramid is 10 ft, what is the area of the square base?
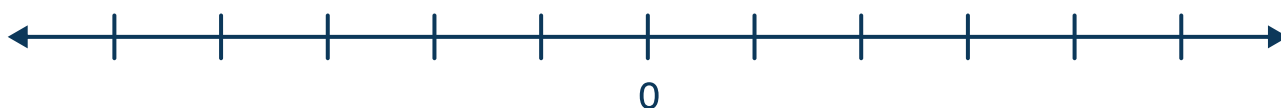
Show your work and write you answer in the space below.

✏ Answer

5 Solve the inequality and plot the answer on the number line.

$-3x + 9 > 2x - 16$

Answer:_____

0

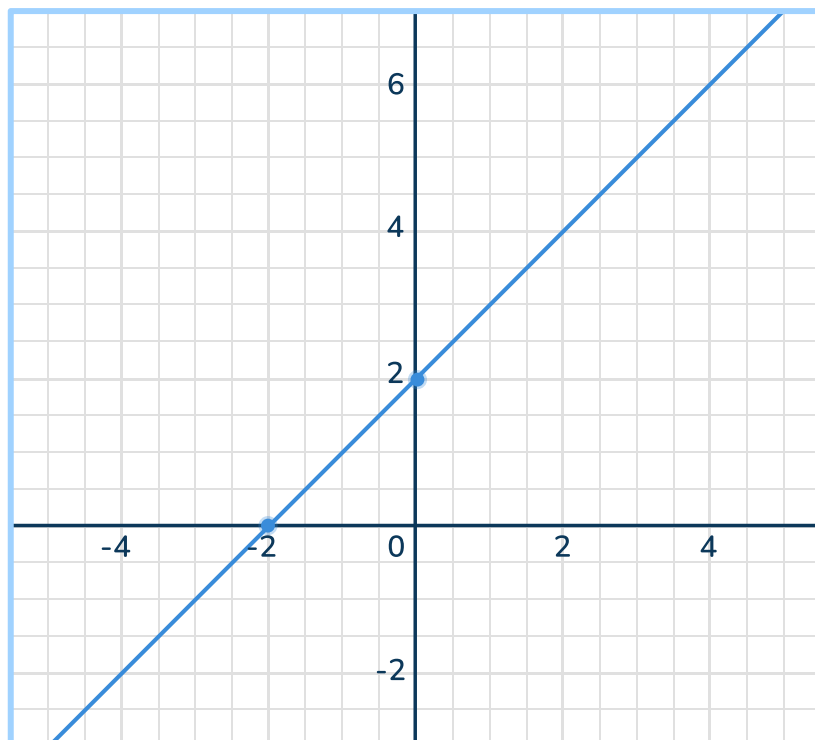**6** What is the approximate volume of a cone with a diameter of 18 inches and a height of 18 inches?

Show your work and write you answer in the space below.

✎ Answer

7   Determine the slope and the y-intercept of the line graphed below.

Slope = _____

y-intercept = _____

---

8   Find the value of b makes the equation true?

$$3b = \frac{4 - b}{2}$$

Use the space to show your work.

> ✎ Answer

9   A bag contains red marbles, white marbles, and blue marbles.
   - There is 30% probability that a red marble will be selected.
   - There is a 40% probability that a blue marble will be selected.

What is the probability that a red marble will be selected, replaced, then a blue marble is selected?

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10   Find the perimeter of the figure below.

5 in

8 in
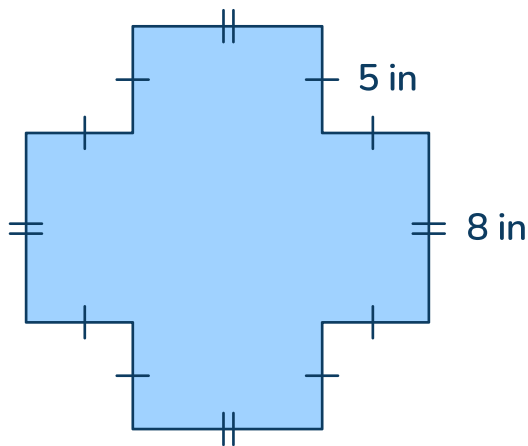
Use the space below to show your work.

✎ Answer

11 The number of cans a machine fills is proportional to the number of minutes the machine operates. The machine fills 320 cans every 40 minutes. Create a graph that shows the number of bottles, y, the machine fills in x minutes.
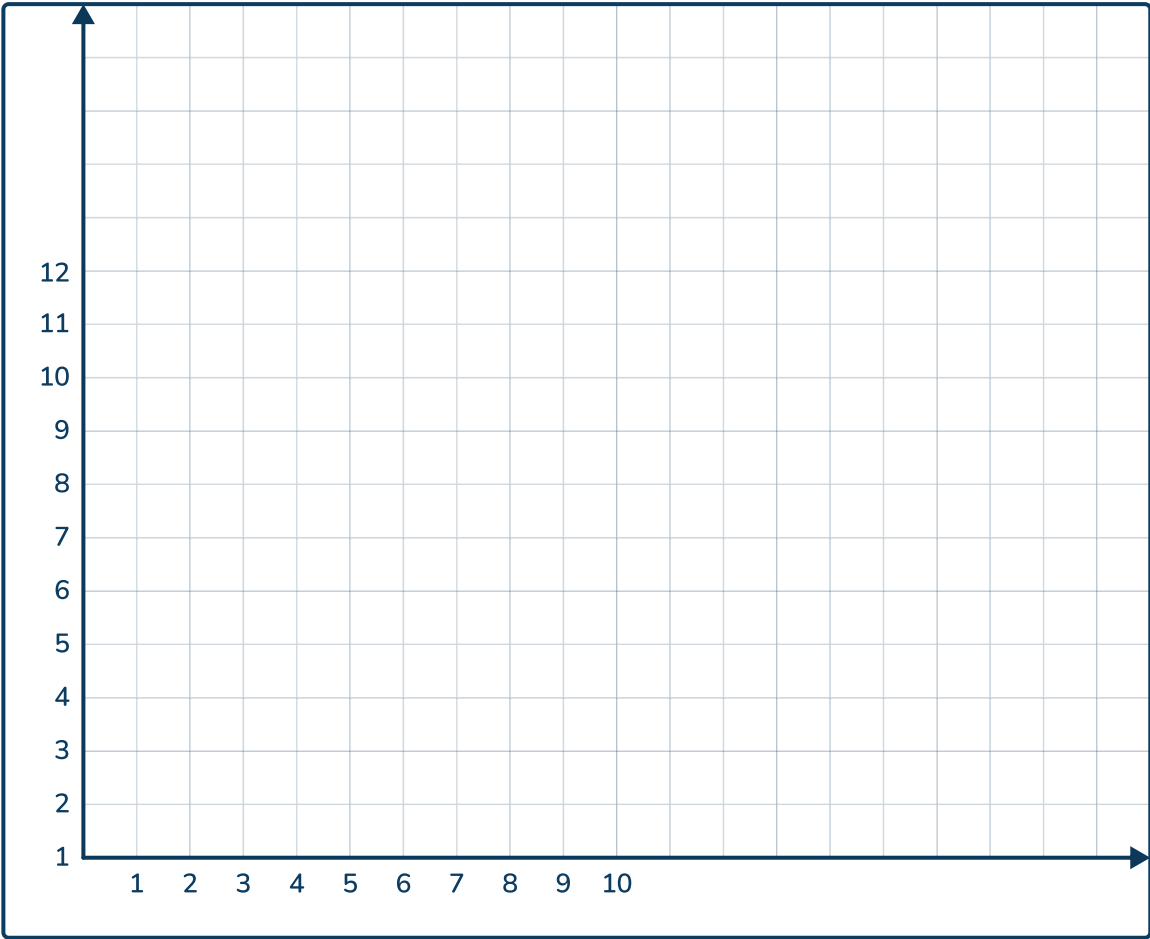
12 Place the words on the lines below in the Venn diagram that represents the real numbers.

Integers

Rational numbers

Natural numbers

Whole numbers

Irrational numbers
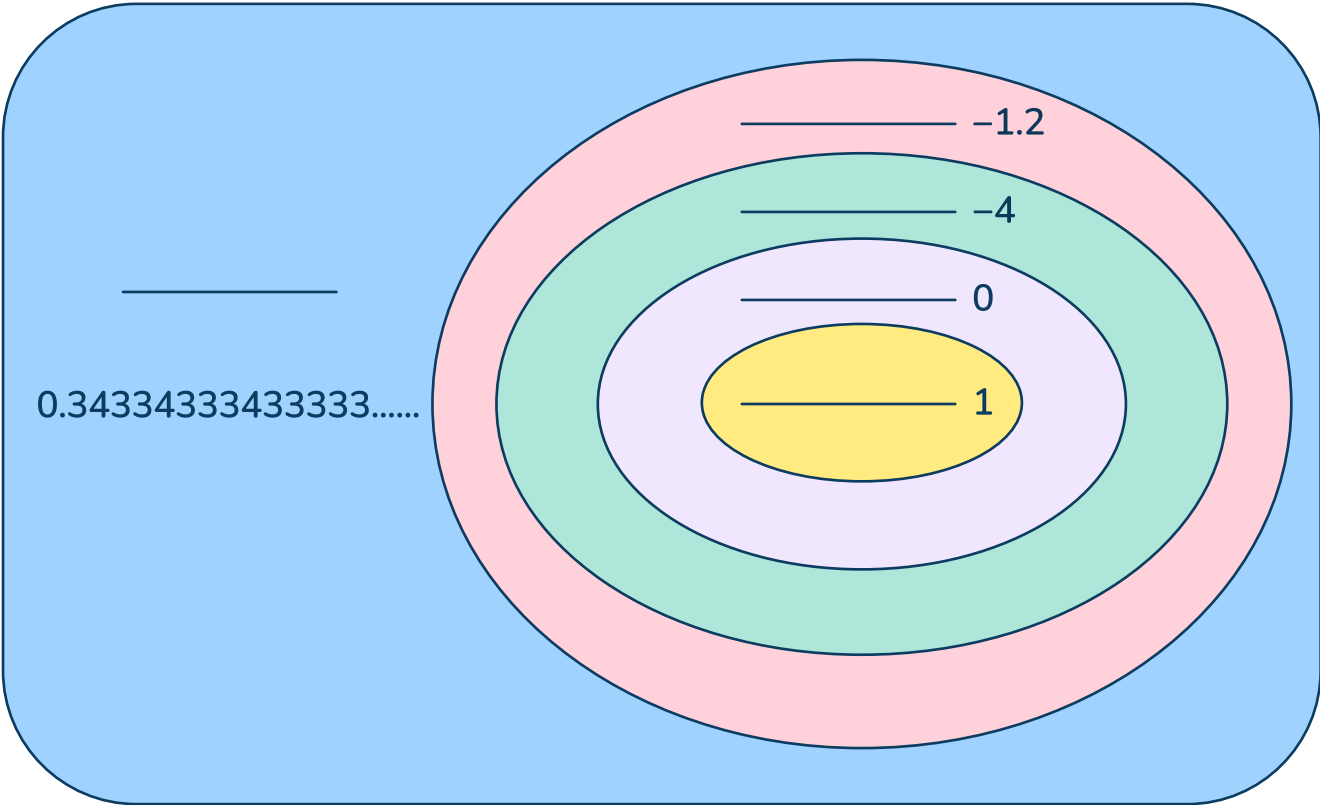
13 Linear function A passes through the points (-1, 6) and (5, -7). What is the rate of change of function A?

    A. $\dfrac{13}{6}$

    B. $-\dfrac{13}{6}$

    C. $\dfrac{6}{13}$

    D. $-\dfrac{6}{13}$

---

14 Which is the best statement to describe the data in a scatter plot where the y-values are increasing as the x-values are decreasing?

    A. The data can be modeled by a horizontal line.
    B. The data cannot be modeled by a line.
    C. The data can be modeled by a line with a negative slope.
    D. The data can be modeled by a line with a positive slope.

15 Use the table below to answer the question.

Gina runs her family's home repair service. The table below shows what the service charges for the amount of hours worked. Write a linear equation that represents the information in the table.

Hours worked, x	Total amount of money charged, y
0	$80
1	$105
3	$155
5	$205

Use the space below to write your answer.

✏ Answer

16 There are two boxes that are in the shape of rectangular prisms that were stored in a truck. The dimensions of each box are:

- Box 1 has a height of 2.4 feet, width of 6.7 feet and height of 10.2 feet.
- Box 2 has a height of 5.5 feet, width of 3.2 feet and height of 11.2 feet.

What is the difference in volume between the two boxes?

A. 33 in³
B. 32.10 in³
C. 33.104 in³
D. 32.104 in³

---

17 What is the missing side of the right triangle rounded to the nearest tenth?

15 cm

7 cm
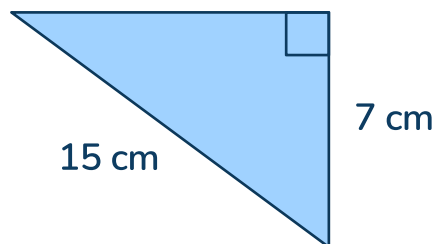
A. 13.3 cm
B. 14.3 cm
C. 16.6 cm
D. 15.5 cm

18   The box plots below represent the points scored of two basketball teams.

Team A

12   17   24   33   61

```
0    5   10   15   20   25   30   35   40   45   50   55   60   65   70
```

Team B

0   12   24   61   70

```
0    5   10   15   20   25   30   35   40   45   50   55   60   65   70
```
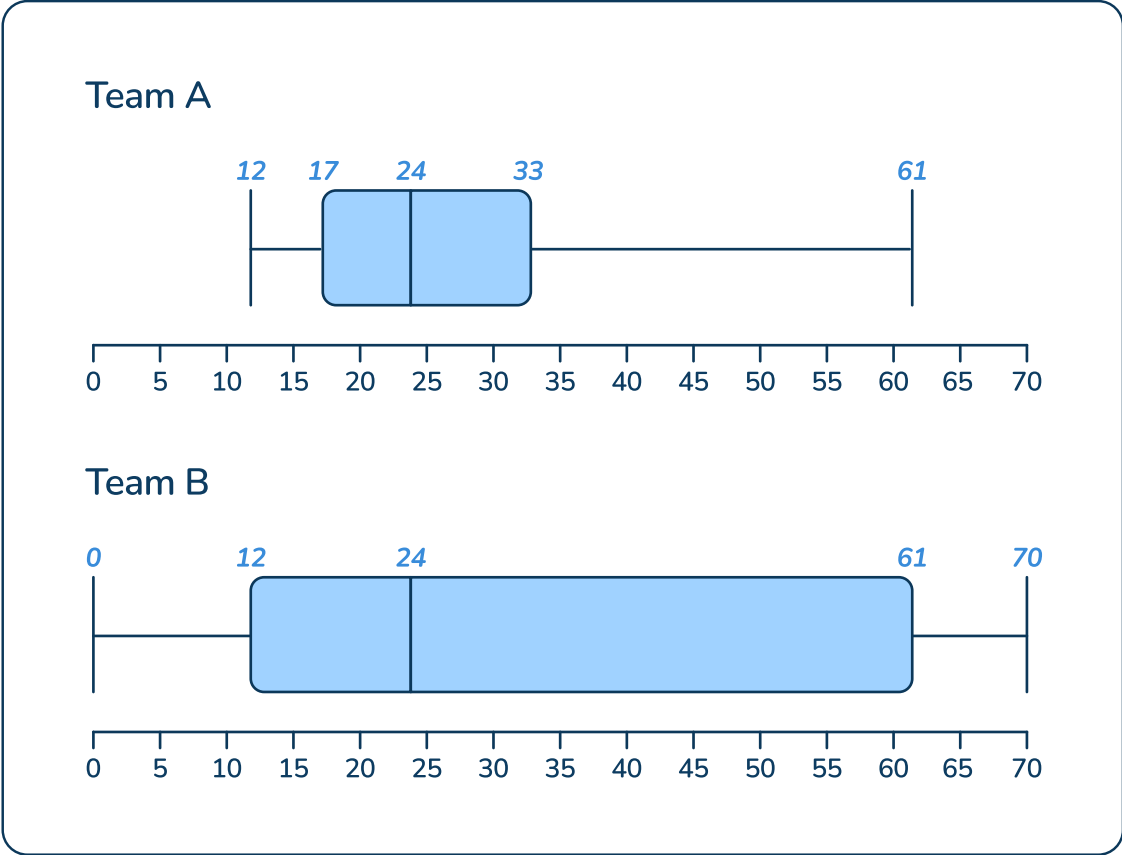
Write two true statements comparing the data of points from both teams.

Statement 1:_____

Statement 2:_____

19 A ladder leans against a building. The top of the ladder hits the building at 15 feet and the bottom of the ladder is 8 ft from the base of the building. How long is the ladder?
Use the space to show your answer.

✏️ Answer

20 Jumel and Ashley have two of the most popular phones on the market, a Droid and an iFone. The cost of both monthly cell phone plans are described below:

Jumel's Plan: A monthly fee of $60, in addition to $0.05 per text message sent, after 20 texts.
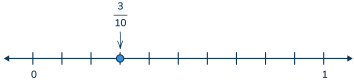**Ashley's Plan:** A monthly fee of $45, in addition to $0.35 per text message sent.

Write two equations one to represent Jumel's Plan and one to represent Ashley's Plan. Let c represent the total cost and t represent the number of texts.

Whose plan, Jumel's or Ashley's, would cost less if they sent 30 texts in a month? How much less would it cost? **Show your work in the space below.**
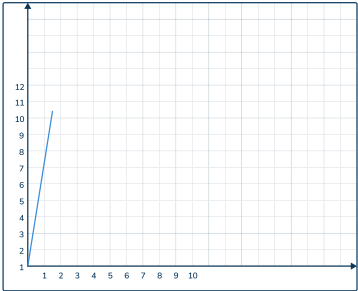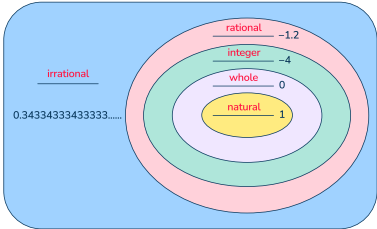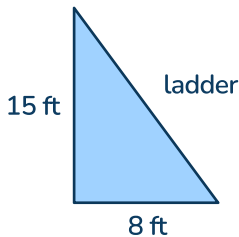
✏️ Answer

Answer Key

UNIT 1 - NO CALCULATOR			
Item number	Correct answer	Standard(s)	DOK
1	A,C,E	**8.NS.2**	DOK 1
2	$p = 512$	**8.NS.1b**	DOK 2
3	D	**8.PS.3**	DOK 2
4	$-2.5(x - 2) = -1.5x + 1.5$ $-2.5x + 5 = -1.5x + 1.5$ $-x = -3.5$ $x = 3.5$	**8.PFA.5**	DOK 2
5	D	**8.PFA.3**	DOK 2
6	C	**8.NS.1b**	DOK 3
7	Domain: 5, -2, 0 Range: 4, 6, 2	**8.PFA.2**	DOK 2
8	C	**8.PFA.3**	DOK 3
9	A	**8.PFA.3e**	DOK 2
10	Cylinder = V = 144π = 452.4 ft³ Cone = V = 48π = 150.8 ft³ Ratio of cone volume to cylinder volume $= \dfrac{48\pi}{144\pi} = \dfrac{1}{3}$	**8.MG.2c**	DOK 3

UNIT 1 - NO CALCULATOR			
Item number	**Correct answer**	**Standard(s)**	**DOK**
11	Prob of blue $= \dfrac{6}{20} = \dfrac{3}{10}$	**8.PS.1** **8.NS.1**	DOK 3
12	C	**8.MG.5**	DOK 1
13	B	**8.PFA.3**	DOK 2
14	Input: 2, 4, 6, 8 Output: 5, 7, 9, 11	**8.PFA.2** **8.PFA.3**	DOK 3
15	B'(-4, -5)	**8.MG.3**	DOK 2
UNIT 2 - CALCULATOR			
Item number	**Correct answer**	**Standard(s)**	**DOK**
1	$21.9 \approx 22\%$	**8.CE.1**	DOK 2
2	A'(3, -4) B'(-2, -4) C'(3, 3) D'(-2, 3)	**8.MG.3**	DOK 3
3	Complementary angles: ∠1 & ∠2 Supplementary angles: ∠4 & ∠5 Vertical angles: ∠1 & ∠4 Adjacent angles: ∠4 & ∠3 (sample answer)	**8.MG.1a**	DOK 2

UNIT 2 - CALCULATOR			
Item number	Correct answer	Standard(s)	DOK
4	$V = \dfrac{1}{3} Bh$ $1470 = \dfrac{1}{3}(B)(10)$ $147 = \dfrac{1}{3}(B)$ $441 = B$ Area of the base is 441 ft²	**8.MG.2**	DOK 3
5	$-3x + 9 > 2x - 16$ $-5x > -25$ $x < 5$ 	**8.PFA.5**	DOK 2
6	$= \dfrac{1}{3}(9)^2(18)$ ≈ 1526.81 in³	**8.MG.2**	DOK 1
7	Slope = 1 y-intercept = 2	**8.PFA.3**	DOK 2
8	$3b = \dfrac{4 - b}{2}$ $6b = 4 - b$ $7v = 4$ $v = \dfrac{4}{7}$	**7.CE.2c** **7.MG.2**	DOK 2

UNIT 2 - CALCULATOR			
Item number	Correct answer	Standard(s)	DOK
9	Prob of red = $\dfrac{30}{100} = \dfrac{3}{10}$ Prob blue = $\dfrac{40}{100} = \dfrac{4}{10} = \dfrac{2}{5}$ Prob of red and then blue = $\dfrac{3}{10} \times \dfrac{2}{5} = \dfrac{6}{50} = \dfrac{3}{25}$	**8.PS.1**	DOK 3
10	8(4)=32 8(5) = 40 Perimeter = 72 inches	**8.MG.5**	DOK 3
11	 $y = 8x$	**8.PFA.3a**	DOK 3
12		**8.NS.2**	DOK 2
13	B	**8.PFA.3**	DOK 2
14	D	**8.PS.3**	DOK 3

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UNIT 2 - CALCULATOR			
Item number	Correct answer	Standard(s)	DOK
15	$y = 25x + 80$	**8.PFA.3**	DOK 3
16	C	**8.MG.2**	DOK 3
17	A	**8.MG.4**	DOK 2
18	Answers vary: Statement 1: The median score of both teams is the same. Statement 2: The spread of points is wider for Team B.	**8.PS.2h**	DOK 3
19	 8² + 15² = length of ladder length of ladder is 17 ft	**8.MG.4**	DOK 3
20	Jumel: y = 0.05x + 60 Ashley: y = 0.35x + 45 Jumel: y=0.05(30-20)+60= $60.50 Ashley = y = 0.35(30) + 45 = $55.50 Ashley's plan would cost less; 60.50-55.50 = $5 less	**8.PFA.3** **8.PFA.4**	DOK 3

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Breakdown of Assessment by domain				
Number and Number Sense (NS)	Computation and Estimation (CE)	Measurement and Geometry (MG)	Probability and Statistics (PS)	Patterns, Functions, and Algebra (PFA)
13%	4%	32%	13%	38%

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