

Released Assessment Questions, 2017

QUESTIONS

Grade 9 Assessment of Mathematics • Academic

Read the instructions below.

Along with this booklet, make sure you have the *Answer Booklet* and the Formula Sheet.

You may use any space in this book for rough work for multiple-choice questions only.

The diagrams in these booklets are **not** all drawn to scale.

ATTENTION:

Unlike in the actual assessment booklet, the questions in this booklet are sorted by strand.

There are more multiple-choice questions in this booklet than in a regular booklet.

Continue to read the directions on the cover of the *Answer Booklet*.

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Remember to write your answers in your *Answer Booklet*.

1 Which is a simplified form of this expression?

$$\frac{x^8(x^6)}{x^4}$$

a x^8

b x^{10}

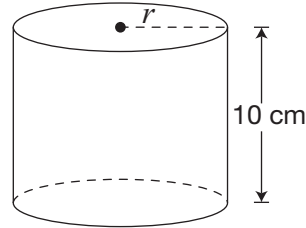
c x^{12}

d x^{18}

$$= \frac{x^{14}}{x^4}$$

$$= x^{10}$$

2 The cylinder pictured below has a volume of 500 cm^3 and a height of 10 cm.



Which of the following represents the radius of the cylinder, r , in centimetres?

Hint:
 $V = \pi r^2 h$

a $\sqrt{\frac{50}{\pi}}$

b $\frac{\sqrt{50}}{\pi}$

c $\frac{50}{\pi}$

d $\frac{50}{2\pi}$

$$\frac{500}{10} = \frac{\pi r^2 10}{10}$$

$$\frac{50}{\pi} = \frac{\pi r^2}{\pi}$$

$$\sqrt{\frac{50}{\pi}} = \sqrt{r^2}$$

$$\sqrt{\frac{50}{\pi}} = r$$

3 Which of the following is a simplified form of $(-2m + 3) - (5m - 6)$?

- a $3m - 3$
 - b $3m + 9$
 - c $-7m - 3$
 - d $-7m + 9$
- Handwritten work:*
 $-2m + 3 + -5m + 6 = -7m + 9$

4 The equation below can be used to convert between temperatures in degrees Celsius, C , and temperatures in degrees Fahrenheit, F .

$$\frac{C}{5} = \frac{F - 32}{9}$$

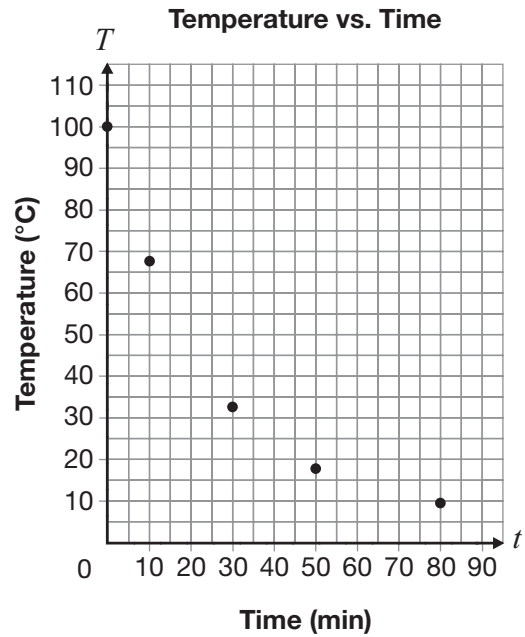
Which correctly completes the statement?

If the temperature in degrees Celsius is 15, the temperature in degrees Fahrenheit is

- a less than 0.
 - b greater than 60.
 - c between 20 and 40.
 - d between 40 and 60.
- Handwritten work:*
 $\frac{15}{5} = \frac{F - 32}{9}$
 $9 \cdot 3 = \frac{F - 32}{9} \cdot 9$

$$\begin{array}{r} 27 = F - 32 \\ +32 \quad \quad +32 \\ \hline F = 59 \end{array}$$

5 A pot of hot soup is placed in a refrigerator to cool. Information about the temperature of the soup at five different times is shown.



Which statement below is true based on the overall trend in the data?

- a At 90 minutes, the temperature of the soup will be 0°C .
- b The temperature of the soup decreases at a constant rate. X
- c It takes approximately 18 minutes for the soup to cool to half its original temperature. c
- d There is a greater decrease in temperature between 50 and 80 minutes than between 10 and 30 minutes. X

6 The total cost for an extra large pizza at a restaurant is \$14.50, plus \$1.25 for each topping.

Which of the following equations represents the relationship between the total cost, C , in dollars, and the number of toppings, n ?

- a $C = 1.25n$
- b $C = 15.75n$
- c** $C = 1.25n + 14.50$
- d $C = 14.50n + 1.25$

$$C = 1.25n + 14.50$$

7 One of the following tables shows information about a linear relationship.

Using first differences, select this table.

a

x	y
-3	9
-2	6
-1	4
0	3

+1 (-3 9) -3
 +1 (-2 6) -2
 +1 (-1 4) -1

X/ON

b

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

+1 (0 -5) +2
 +1 (1 -3) +3
 +1 (2 0) +3

NON

c

x	y
2	0
3	-2
4	-4
5	-6

+1 (2 0) -2
 +1 (3 -2) -2
 +1 (4 -4) -2
 +1 (5 -6) -2

} *CONSTANT*

d

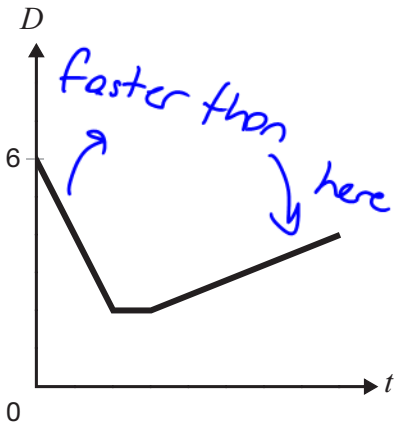
x	y
-1	10
0	15
1	25
2	40

+1 (-1 10)

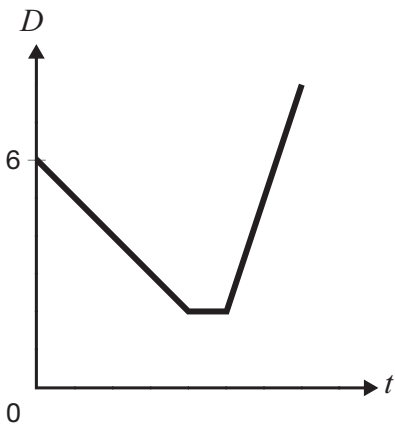
8 Raven starts 6 m away from a motion detector. She walks quickly toward it, stops 2 m from the detector for a moment and then backs away from it slowly.

Which of the following graphs could represent the relationship between her distance from the detector, D , and time t , in seconds?

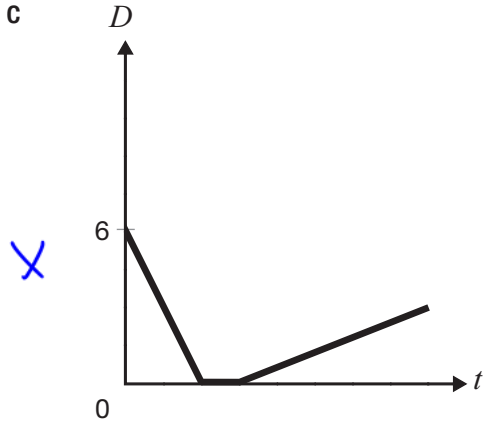
a



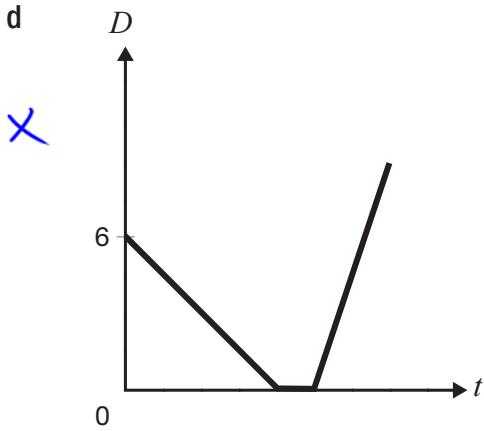
b



c



d





Go to the *Answer Booklet* and complete the six open-response questions before continuing with question 15.

- 9 Open-Response
- 10 Open-Response
- 11 Open-Response
- 12 Open-Response
- 13 Open-Response
- 14 Open-Response

15 What are the slope and the y -intercept of the line represented by $3x - 2y + 6 = 0$?

a $\frac{3}{2}, 3$

b $\frac{3}{2}, 6$

c $\frac{2}{3}, 2$

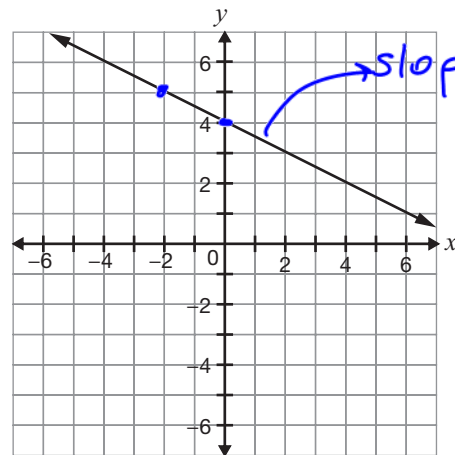
d $\frac{2}{3}, 3$

$3x + 6 = 2y$

$\frac{3}{2}x + 3 = y$

$y = \frac{3}{2}x + 3$

16 A line is shown on the grid below.



Which of the following equations represents a line that is perpendicular to the line on the grid?

a $y = -2x - 4$

b $y = 2x + 4$

c $y = -\frac{1}{2}x - 4$

d $y = \frac{1}{2}x + 4$

negative reciprocal

17 The relationship between the total cost, C , of holding a dance and the number of guests, n , is represented by the equation $C = 25 + 15n$.

Due to fire codes, the number of guests cannot exceed 150.

What are all the possible values of the total cost for this situation?

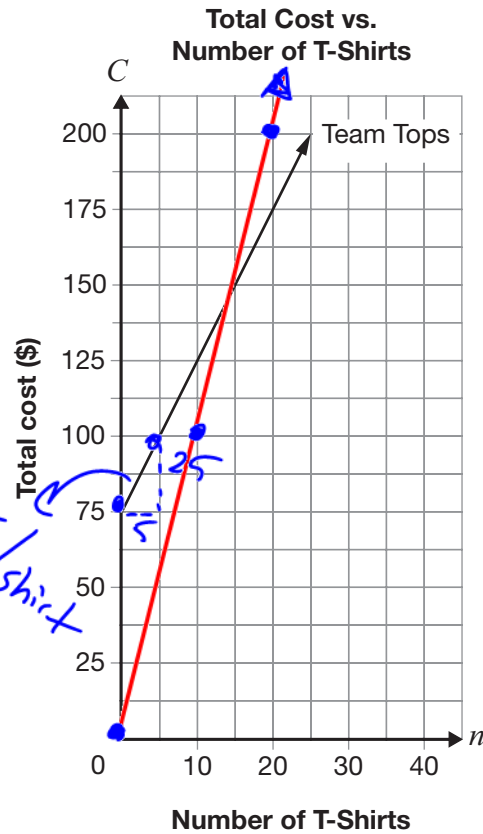
The total cost can range from

- a \$25 to \$2275.
- b \$25 to \$3765.
- c \$15 to \$2275.
- d \$15 to \$3765.

$n=0$ to $n=150$

$C=25+15(0)$ $C=25+15(150)$
 $C=25$ $=\$2275$

18 The total cost for T-shirts at Team Tops is made up of a set-up fee and a charge for each T-shirt as represented by the graph.

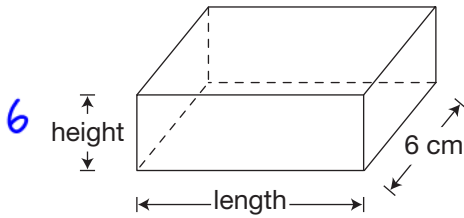


Super Shirts has no set-up fee but charges twice as much for each T-shirt as Team Tops.

Which of the following statements is true?

- a It is always cheaper to order from Super Shirts.
- b It is the same price to order 150 T-shirts from either company.
- c It is cheaper to order 10 T-shirts from Team Tops than from Super Shirts.
- d It is more expensive to order 20 T-shirts from Super Shirts than from Team Tops.

- 19** The rectangular prism pictured below has a volume of 216 cm^3 .

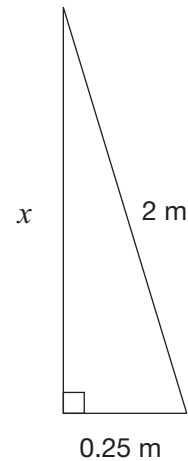


Which of the following lengths produces the prism with the smallest height?

- a 3 cm
- b 6 cm**
- c 12 cm
- d 18 cm

→ close to being a cube

- 20** Which equation correctly uses the Pythagorean theorem to determine the value of x in the diagram?



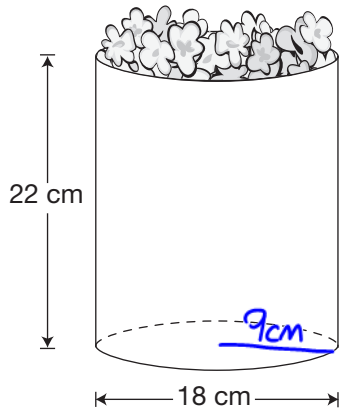
- a $x = \sqrt{2 + 0.25}$
- b $x = \sqrt{2 - 0.25}$
- c $x = \sqrt{2^2 + 0.25^2}$
- d $x = \sqrt{2^2 - 0.25^2}$**

$$x^2 + 0.25^2 = 2^2$$

$$x^2 = 2^2 - 0.25^2$$

$$x = \sqrt{2^2 - 0.25^2}$$

21 Paper is used to make a popcorn container in the shape of an open-topped cylinder, as pictured.



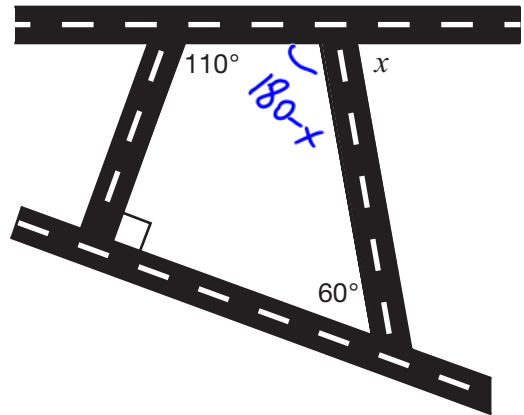
Which of the following calculations would correctly determine the least amount of paper required to make the container?

- a $\pi(9)^2(22)$
- b $\pi(18)^2(22)$
- c $\pi(9)^2 + 2\pi(9)(22)$**
- d $\pi(18)^2 + 2\pi(18)(22)$

$$22 \times \text{Area} + \pi(9)^2$$

$$= 2\pi(9)(22) + \pi(9)^2$$

22 Four streets are pictured.



What is the value of x ?

- a 60°
- b 80°**
- c 100°
- d 110°

$$90 + 110 + 180 - x + 60 = 360$$

$$440 - x = 360$$

$$440 - 360 = x$$