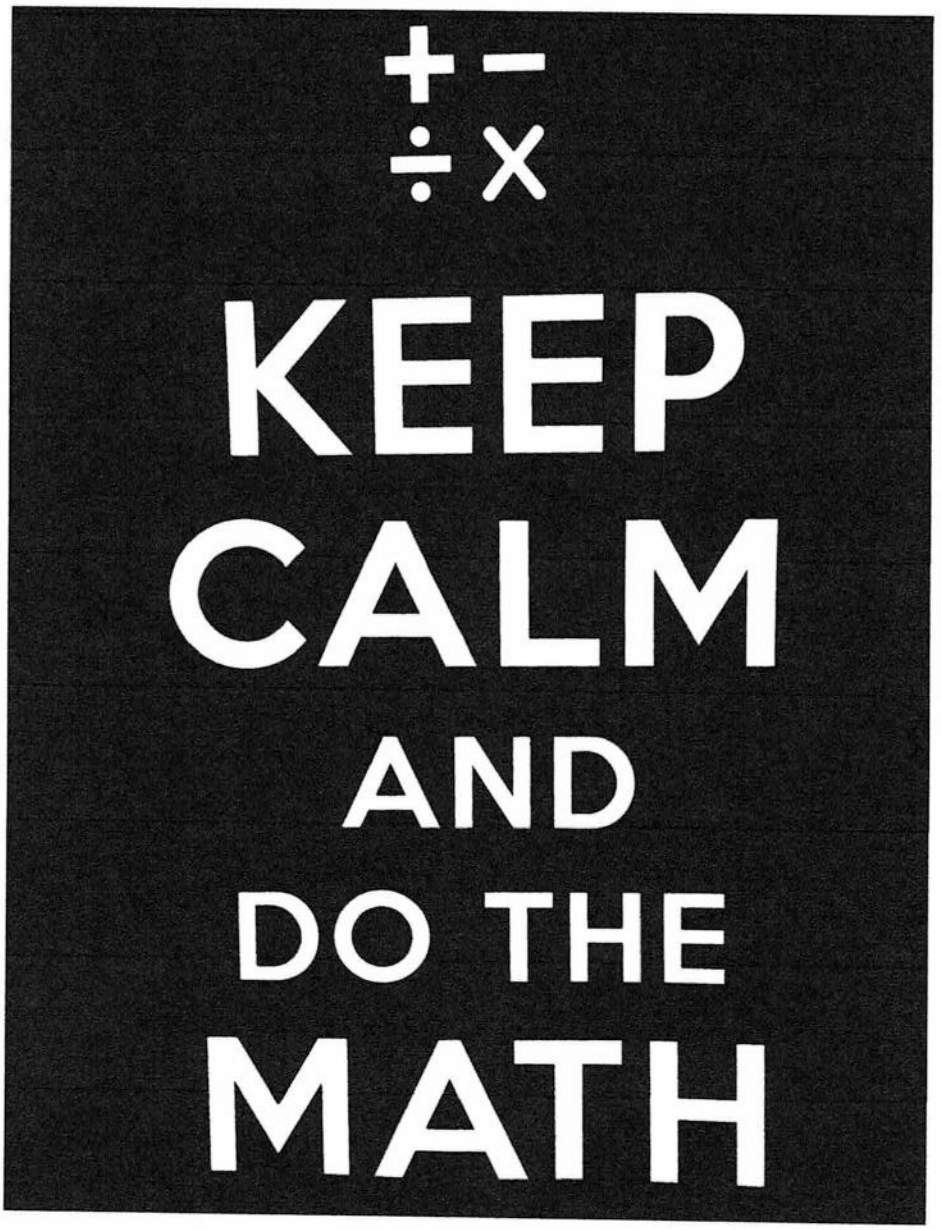
NOMBRE: _____

P.A.T Prep

PART B – Assessment Highlights

2011 to 2018

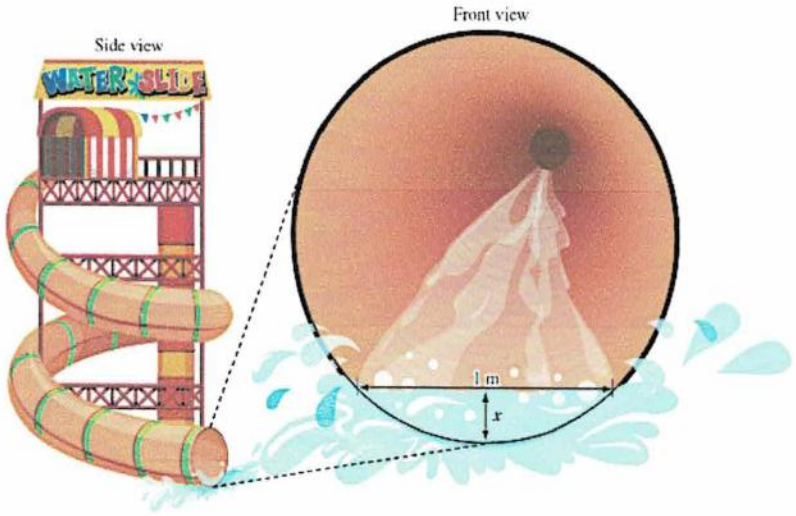


St. Brendan School

Mr. Martínez

P.A.T. Assessment Highlights 2017-2018
PART B

The diameter of a cylindrical waterslide is 1.5 m. The water running along the bottom of the slide measures 1 m across, as shown in the diagram below.



5. To the nearest hundredth of a metre, what is the depth of the water, x, at its deepest point?

A. 0.19 m
B. 0.25 m
C. 0.40 m
D. 0.50 m

According to a weather forecast for a particular city on a given day, the probability of precipitation is 20%.

6. Based on this forecast, a reasonable prediction can be made that in the city

A. the rainfall will be very light
B. it will rain on 2 of the next 10 days
C. 20% of the area will have rain on that day
D. it is more likely to be dry than wet on that day

A square design is painted on a wall that has a length of 24 m and a height of 18 m. The design covers 75% of the area of the wall.

8. What is the perimeter of the design?

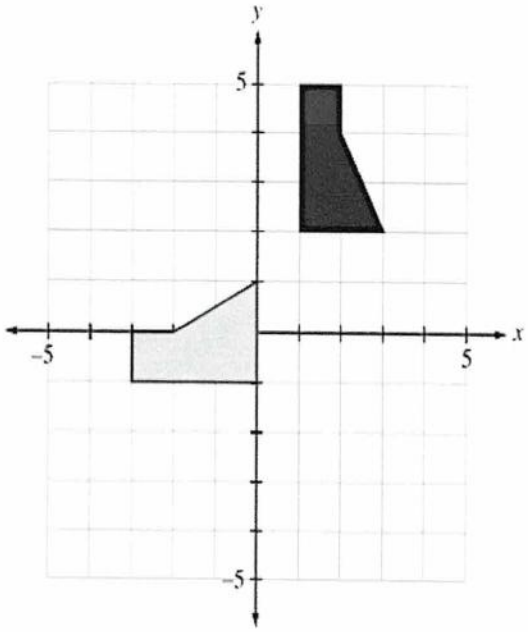
A. 72 m

B. 96 m

C. 324 m

D. 432 m

In the diagram below, the grey 2-D shape is the image of the black 2-D shape after it has been rotated.



11. Which of the following ordered pairs represents the centre of rotation of the transformation shown above?

A. (0, 1)

B. (1, 0)

C. (0, 2)

D. (2, 0)

The table shown below lists the cost of renting a rock-climbing gym for different numbers of people.

Number of People (n)	Cost (c)
2	\$55.00
4	\$64.50
6	\$74.00
8	\$83.50

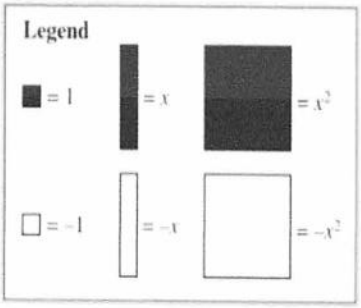
13. Which of the following equations could be used to calculate the cost, c, to rent the rock-climbing gym for any number of people, n?

A. $c = 45.50 + 4.75n$

B. $c = 45.50n + 4.75$

C. $c = 45.50 + 9.5n$

D. $c = 45.50n + 9.5$



The model shown below represents an equation.

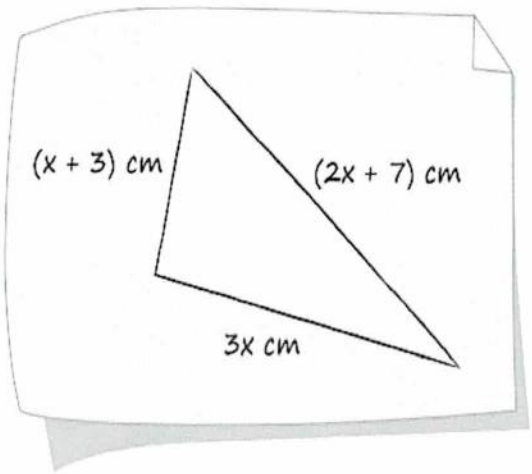
15. The solution to the equation represented above is

A. $x = -1$

B. $x = 0$

C. $x = 1$

D. $x = 2$



Numerical Response

5. If the perimeter of the triangle shown above is 40 cm, what is the length of the longest side of the triangle?

Answer: _____ cm

(Record your answer in the numerical-response section on the answer sheet.)

A basketball coach orders enough pizza for 24 players. He determines that $\frac{1}{4}$ of the players will each eat 3 slices of pizza, $\frac{2}{3}$ of the players will each eat 2 slices of pizza, and the remaining players will each eat 1 slice of pizza.

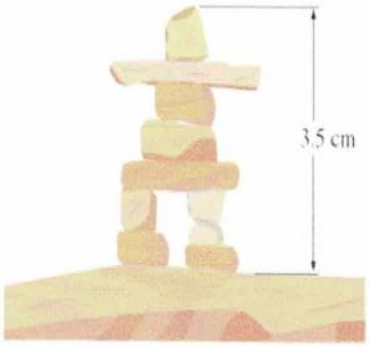
Pizza Size	Number of Slices	Price Including GST ($)
Large	12	15.00

Numerical Response

7. What is the total cost of the order?

Answer: $_____.00

The diagram shown below is a scale drawing of an inukshuk. It is drawn with a scale factor of $\frac{1}{25}$.



Numerical Response

8. The height of the actual inukshuk is _____ cm.

2016-2017

The total length of time it takes for a single passenger train to travel between Vancouver and Toronto is 80 h.

Starting Location	Ending Location	Time (h)
Vancouver	Jasper	$\frac{5}{9}x$
Jasper	Winnipeg	$\frac{2}{3}x$
Winnipeg	Toronto	x

21. How long does it take the train to travel between Winnipeg and Toronto?

A. 24 h
B. 36 h
C. 44 h
D. 53 h

The cost of a team banquet is \$200 for the room rental and \$15 per person, n, for the meal. All taxes are included in these costs. The team has a maximum budget of \$650 for the banquet.

20. The inequality that can be used to determine how many people can attend is

A. $15n + 200 > 650$

B. $15n + 200 < 650$

C. $15n + 200 \geq 650$

D. $15n + 200 \leq 650$

Jack has a large, square section of land with an area of 160 000 m^2. A small, square section is fenced off to create a pasture for his goats. The length of one side of the small section of land is one-eighth of the length of one side of the large section of land.

29. What is the perimeter of the fence that encloses the small, square section of land?

A. 160 m

B. 200 m

C. 400 m

D. 566 m

Jonas conducts a survey to determine which flavour of ice cream is the favourite among the students at his school. He plans to hand out the questionnaire shown below to 100 randomly selected students.

36. The analysis of the data collected by this survey would be **most** affected by issues related to

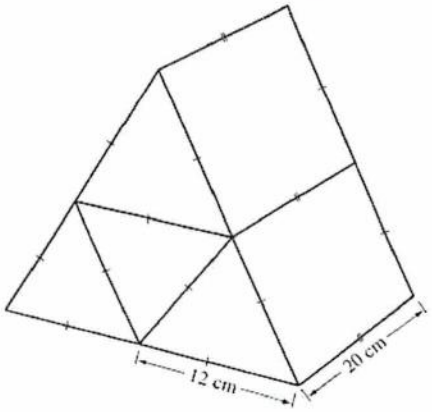
A. privacy

B. use of language

C. time and timing

D. cultural sensitivity

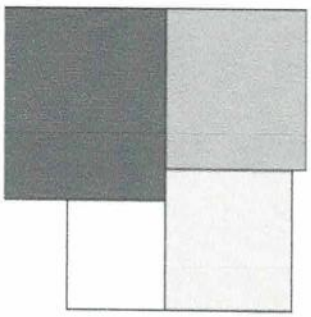
Four identical triangular prisms are arranged together to form one large, triangular prism, as shown below. The five exterior surfaces of the large prism are then painted.



30. To the nearest square centimetre, what is the total area of the painted surfaces?

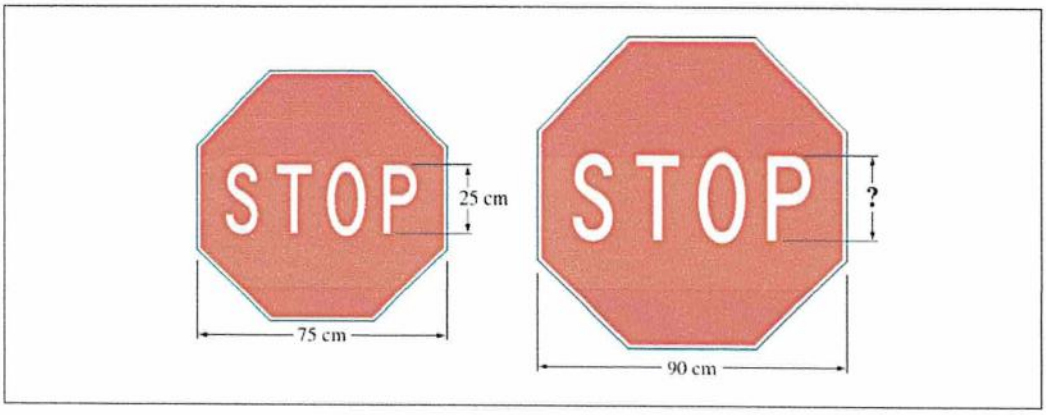
A. 1 939 cm^2
B. 2 016 cm^2
C. 2 659 cm^2
D. 2 736 cm^2

The design shown below is created by four squares with areas of 576 cm^2, 400 cm^2, 324 cm^2, and 196 cm^2.



34. What is the perimeter of the design shown above?

A. 144 cm
B. 152 cm
C. 164 cm
D. 176 cm



40. If the two stop signs shown above are similar, what is the height of the letters in the larger stop sign?

A. 30 cm
B. 40 cm
C. 45 cm
D. 50 cm

Amy has already saved $50 toward the purchase of a new camera that has a total cost of $235. She earns the rest of the money she needs to buy the camera by babysitting her sister. Each time she babysits, she is paid $15.

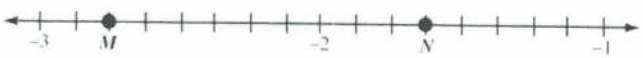
Numerical Response

5. What is the minimum number of times Amy must babysit her sister in order to earn enough money to purchase the camera?

Answer: _____ **times**

Sam plans to graph the following rational numbers on the number line shown below.

Rational Numbers: $-2\frac{1}{4}$ -1.75 $\frac{-3}{2}$ $-2.\overline{8}$ $-1\frac{3}{5}$ $-(1.4)^2$



Numerical Response

6. How many of the rational numbers shown above should be graphed between Point M and Point N on the number line?

Answer: _____

An incorrect simplification of the expression $(2^3)(2^5)^2 \div (4 \times 2)^2$ is shown below.

	$(2^3)(2^5)^2 \div (4 \times 2)^2$
Step 1	$(2^3)(2^5)^2 \div (8)^2$
Step 2	$(2^3)(2^7) \div (8)^2$
Step 3	$(2^3)(2^7) \div (2^3)^2$
Step 4	$(2^3)(2^7) \div (2^5)$
Step 5	$2^{10} \div 2^5$
Step 6	2^2

Numerical Response

8. In which step is the **first** recorded error?

Answer: Step _____

2015 - 2016

1. Another representation of the expression $\left(\frac{2}{3}\right)^4$ is

A. $\frac{2+4}{3+4}$

B. $\frac{2\times4}{3\times4}$

C. $\frac{2+2+2+2}{3+3+3+3}$

D. $\frac{2\times2\times2\times2}{3\times3\times3\times3}$

Jennifer's goal is to save $1 200. Each week she saves 20% of her weekly income of $576.

7. How many weeks will it take Jennifer to reach her goal?

A. 10

B. 11

C. 24

D. 29

A manager selected 25 watches to test from a batch of 750 watches. He determined that 3 of the selected watches were defective. Based on the results of his survey, the manager concluded that 12% of the 750 watches were defective.

10. Which of the following assumptions did the manager use to reach his conclusion?

A. The process for testing the watches was unreliable.

B. The parts used in the watches are rarely defective.

C. The sample was representative of the population.

D. The watches were made by the same employee.

11. *The values of* 4^5 *and* 5^4 *are* ___*i*___ *because* ___*ii*___ .

The statement above is completed by the information in row

	i	*ii*
A.	equal	4×5 has the same value as 5×4
B.	equal	both powers represent the same model
C.	not equal	two powers cannot have the same value
D.	not equal	they cannot be written using the same repeated multiplication

14. The value of x in the equation $3(2x - 1) = \frac{1}{2}(x + 6)$ is

A. $\frac{8}{11}$

B. $\frac{12}{11}$

C. $\frac{14}{11}$

D. $\frac{18}{11}$

26. When the expression $(x^2 - 5x + 4) - (3x^2 + 8x - 20)$ is simplified, the result is

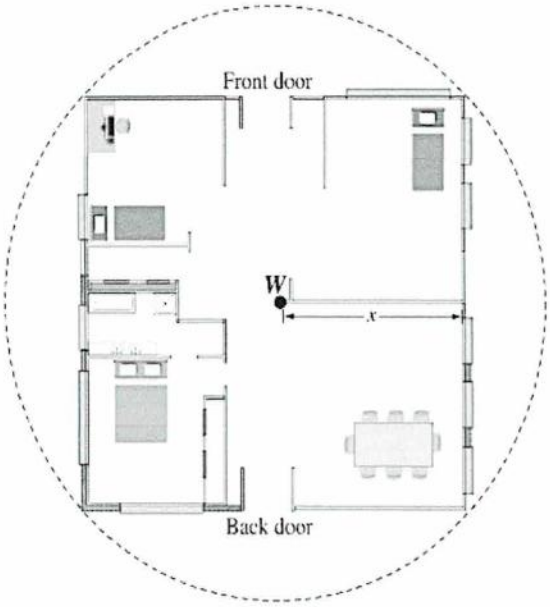
A. $-2x^2 - 13x + 24$

B. $-2x^2 - 3x + 16$

C. $2x^2 + 13x - 24$

D. $2x^2 + 3x - 16$

The letter W is in the centre of the diagram below and represents the location of a wireless router for Internet access in a square house. The router provides access to the area represented by the dotted circle in the diagram below. This circular area has a diameter of 20 m.



12. To the nearest tenth of a metre, the distance, x, from the router, W, to the middle of one outside wall is

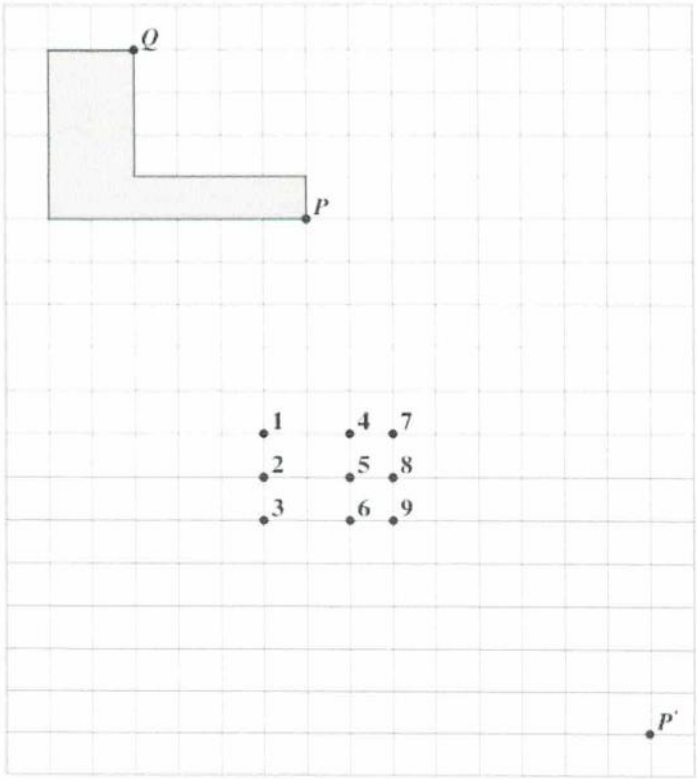
A. 7.1 m

B. 8.9 m

C. 10.0 m

D. 14.1 m

Kate begins to create an image of the shaded 2-D shape shown below by applying a scale factor of $\frac{3}{2}$. The location of Point P' is given.



Numerical Response

5. Which numbered point shown above represents the location of Point Q' in Kate's image?

Answer: Point _____

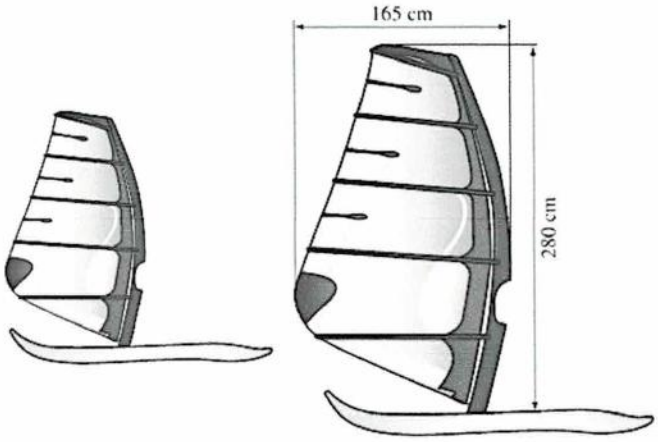
A store owner pays a sales clerk $12/h for each hour worked. The assistant manager of the store earns one-and-a-half times the clerk's hourly wage and the manager of the store earns two-and-a-half times the clerk's hourly wage.

Numerical Response

8. In total, how much money is paid to the three employees in one day if the sales clerk, the assistant manager, and the manager each work 7.25 h?

Answer: $_____

The large sail shown below is an enlargement of the small sail.



Numerical Response

9. What is the height of the small sail if the scale factor of the enlargement is 2.50?

Answer: _____ **cm**

2014 - 2015

Catherine sells cupcakes, c, for \$1.50 each. The ingredients for each cupcake cost her \$0.30, and the sum of all of her other expenses is \$20.00/month.

6. Which of the following expressions represents Catherine's profit each month?

A. $1.5c - (20 + 0.3c)$
B. $20c - (1.5 + 0.3c)$
C. $(20 + 0.3c) - 1.5c$
D. $(1.5 + 0.3c) - 20c$

31. Which number line shown below represents the solution to $4(2x - 1) > 4x + 8$?

A.

B.

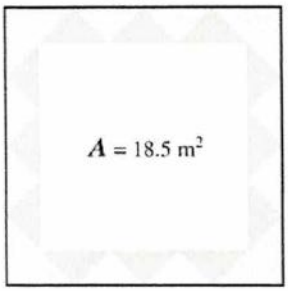
C.

D.

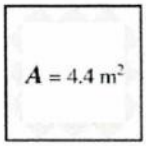
The area, A, of four square carpets is shown below.

Carpet 1

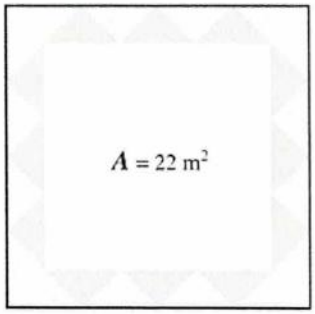
Carpet 2



Carpet 3



Carpet 4



12. Which carpet will cover the most floor area, without touching a wall, when it is laid flat in a square room that has a width of 4.5 m?

A. Carpet 1
B. Carpet 2
C. Carpet 3
D. Carpet 4

Variables q, r, and s represent rational numbers.

$$q > r$$
$$s = q + 1$$

22. Which of the following number lines represents the order of the three rational numbers?

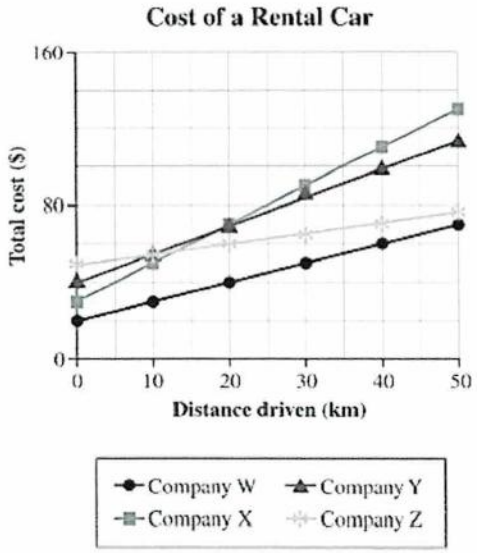
A.

B.

C.

D.

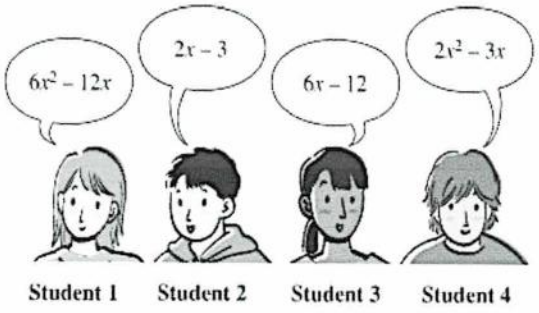
The cost of renting a car includes the base fee and a charge for each kilometre driven. The graph below represents the total cost of renting a vehicle at four different rental car companies.



13. Which rental car company has the smallest charge for each kilometre driven?

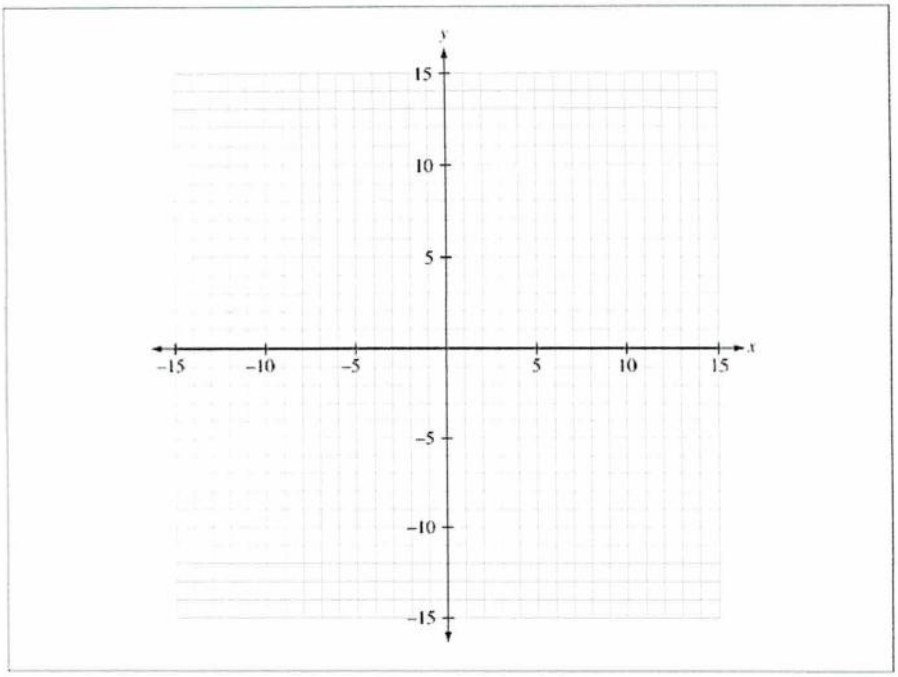
A. Company W
B. Company X
C. Company Y
D. Company Z

Four students simplified the expression $\frac{3x(4x-6)}{2(3x)}$. Their answers are shown below.



16. Which student correctly simplified the expression?

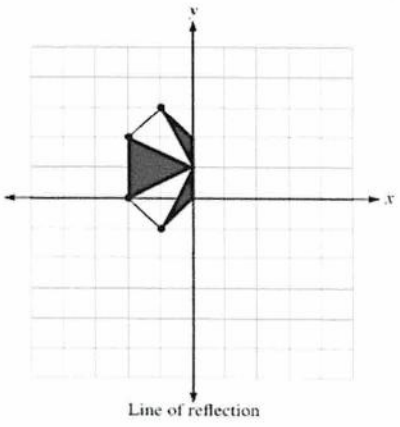
A. Student 1
B. Student 2
C. Student 3
D. Student 4



24. The graphs of the relations $3x + y = 17$ and $y = x + 1$ intersect at the point with the coordinates

A. (0, 1)
B. (3, 8)
C. (4, 5)
D. (5, 4)

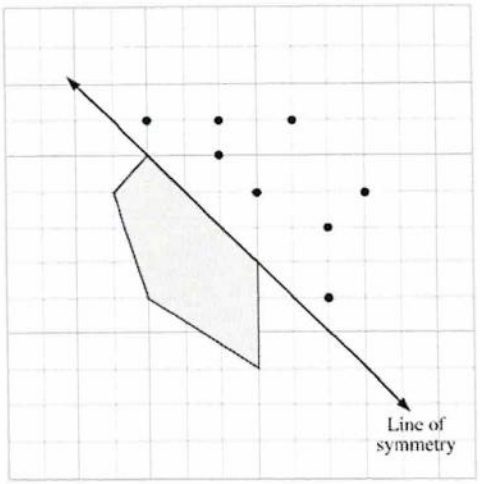
The 2-D shape shown on the Cartesian plane below is reflected about the y-axis.



32. If the original 2-D shape and the reflected image combine to form a new 2-D shape, what is the angle of rotational symmetry of the new 2-D shape?

A. 90°
B. 180°
C. 270°
D. 360°

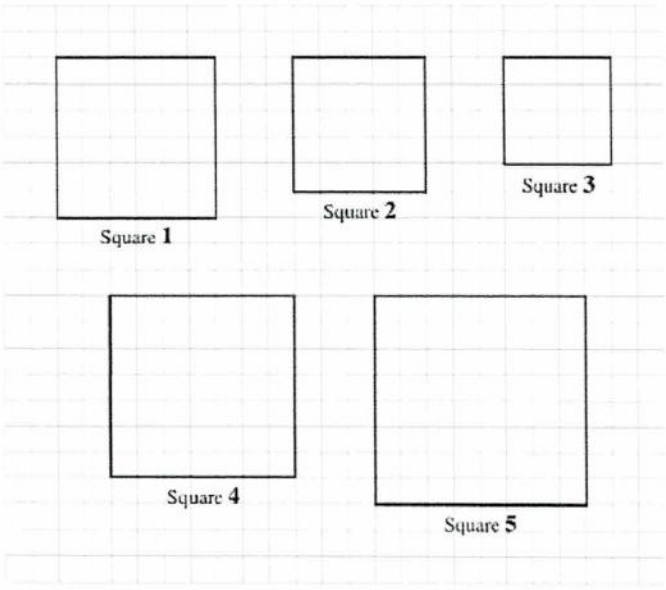
An incomplete 2-D shape and its line of symmetry are shown in the diagram below.



Numerical Response

4. When the 2-D shape is completely drawn, how many points will be inside the 2-D shape?

Answer: _____



Numerical Response

10. Which two squares shown above represent the **best** benchmarks for estimating the value of $\sqrt{43}$?

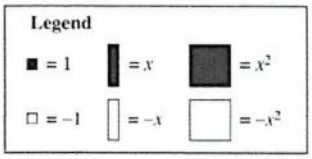
Answer: Square _____ and Square _____

2013 - 2014

The amount of money, A, Hanna receives selling bracelets, b, at a local market is represented by the relation $A = 5b$. Her expenses, E, for making the bracelets are represented by the relation $E = 20 + b$.

19. What is the minimum number of bracelets that Hanna needs to sell to pay for her expenses?

A. 4 bracelets
B. 5 bracelets
C. 6 bracelets
D. 7 bracelets



The diagram below shows an incomplete model of the multiplication of two polynomials.

24. What is the coefficient on the x-term in the product?

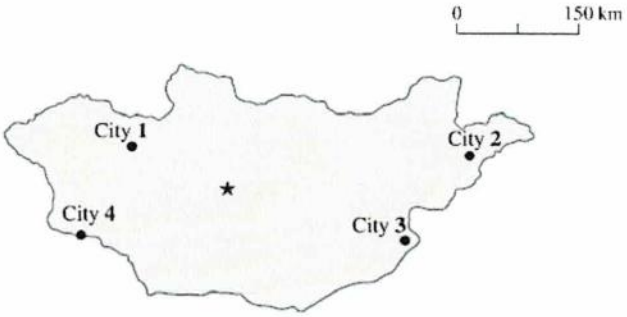
A. −12
B. 12
C. −6
D. 6

When simplified, the expression $\left[\left(a^2b\right)\left(a^3b^2\right)\right]^3$ can be written in the form $a^m b^n$.

37. Which of the following rows correctly identifies the values of m and n?

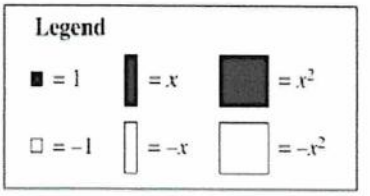
Row	m	n
A.	8	6
B.	9	5
C.	15	9
D.	18	6

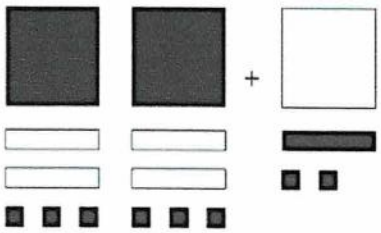
The star on the map below represents the capital city of a country. Maria uses the map to locate a city that is 225 km from the capital.



39. Which of the cities on the map above is the city located by Maria?

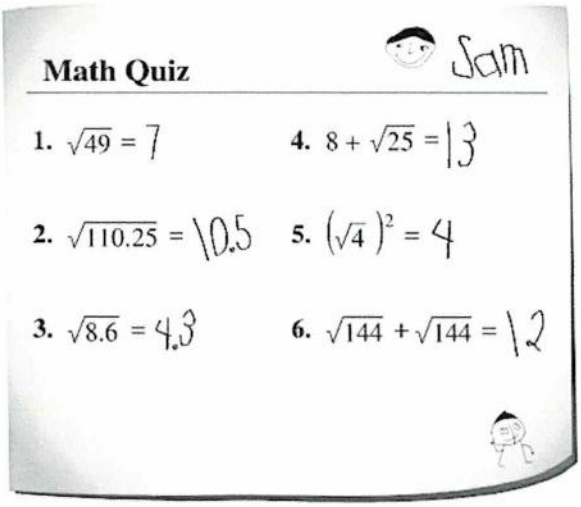
A. City 1
B. City 2
C. City 3
D. City 4





7. Which of the following expressions represents the solution to the model shown above?

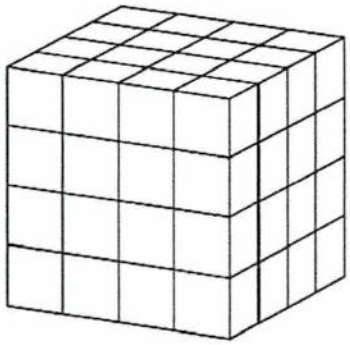
A. $x^2 - 3x + 8$
B. $x^2 + 3x - 8$
C. $-x^2 - 5x + 8$
D. $-x^2 + 5x - 8$



13. What percentage of the questions did Sam answer correctly?

A. 33%
B. 50%
C. 67%
D. 83%

The cubes in the 3-D object shown below represent a repeated multiplication and a power.



32. Which of the following rows identifies the repeated multiplication and the power that the 3-D object represents?

Row	Repeated Multiplication	Power
A.	$3 \times 3 \times 3 \times 3$	3^4
B.	$3 \times 3 \times 3 \times 3$	4^3
C.	$4 \times 4 \times 4$	3^4
D.	$4 \times 4 \times 4$	4^3

Rahim plants a tree in his yard and records its initial height. The height of the tree at the end of the first growing season is 1.3 times its initial height. In the second growing season, the tree grows 14.5 cm to reach a total height of 71.7 cm.

Numerical Response

3. What was the **initial** height of the tree in centimetres?

Answer: _____ **cm**

2012 - 2013

39. Monica multiplies $-\frac{2}{3}$ by a number. If her answer is $-\frac{3}{2}$, then Monica multiplied $-\frac{2}{3}$ by

A. $-\left(\frac{3}{2}\right)^0$

B. $\left(\frac{3}{2}\right)^0$

C. $-\left(\frac{3}{2}\right)^2$

D. $\left(\frac{3}{2}\right)^2$

Chantal receives a $50 gift card to join the online music store shown below.

20. Which of the following inequalities can be used to determine the maximum number of songs that Chantal can purchase with her gift card?

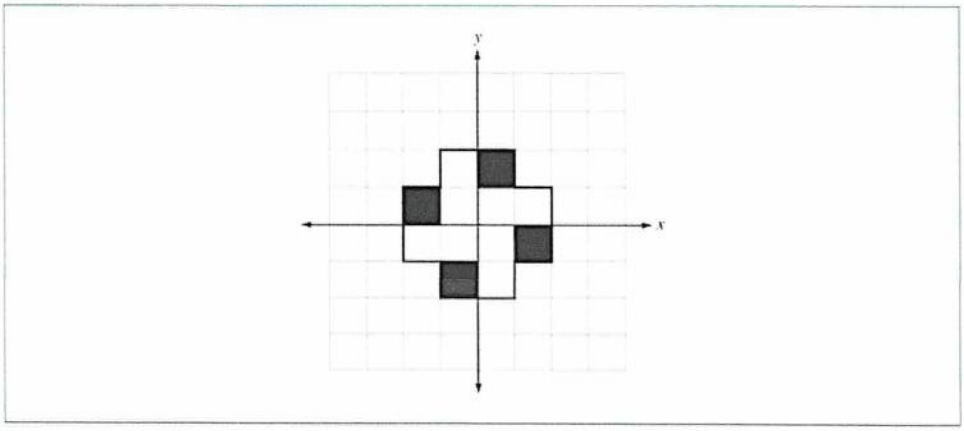
A. $50 \geq 5 + 0.99x$

B. $50 > 5 + 0.99x$

C. $50 \leq 5 + 0.99x$

D. $50 < 5 + 0.99x$

Use the following information to answer question 24.



24. *The shape shown above has rotational symmetry of order* ___i___ *, and* ___ii___ *lines of symmetry.*

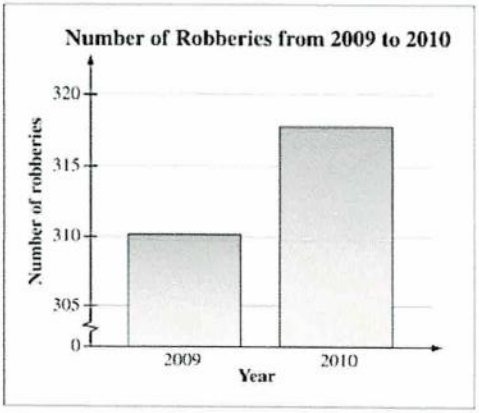
The statement above is completed by the information in row

Row	*i*	*ii*
A.	2	0
B.	2	2
C.	4	0
D.	4	2

Use the following information to answer question 40.

The local newspaper of a large city printed the following graph with the following headline:

"Robberies are Predicted to Double in 2011"



40. The newspaper headline is **not** a reasonable interpretation of the graph shown above because the

A. width of the bars is exaggerated

B. scale of the *y*-axis is misleading

C. probability is based on theoretical data

D. probability is based on experimental data

23. Which of the following rows has the rational numbers ordered from **least** to **greatest**?

Row	Least			Greatest
A.	$-\frac{5}{7}$	$-0.\overline{6}$	$\frac{2}{5}$	0.5
B.	$-0.\overline{6}$	$-\frac{5}{7}$	$\frac{2}{5}$	0.5
C.	$-\frac{5}{7}$	$-0.\overline{6}$	0.5	$\frac{2}{5}$
D.	$-0.\overline{6}$	$-\frac{5}{7}$	0.5	$\frac{2}{5}$

Use the following information to answer question 11.

Raj saves a part of his earnings each week. He uses the pattern below to decide how much of his weekly earnings he will save.

Weekly Earnings (e)	Weekly Savings (s)
\$10	\$7
\$12	\$8
\$14	\$9
\$16	\$10

11. Which of the following equations could represent the relationship between Raj's weekly savings, s, and his weekly earnings, e?

A. $s = e - 3$

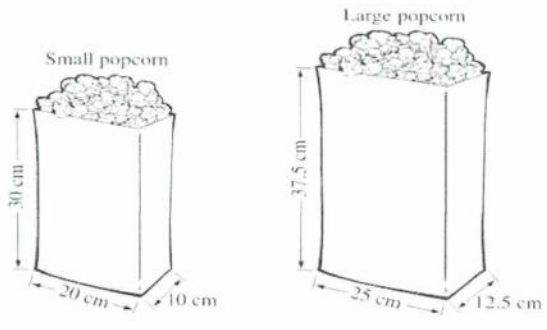
B. $s = e - 6$

C. $s = 2.0(e - 5) - 3$

D. $s = 0.5(e + 10) - 3$

Use the following information to answer numerical-response question 2.

The local movie theatre sells two sizes of popcorn. The large bag of popcorn is a scale enlargement of the small bag.



Numerical Response

2. The difference between the exterior surface area of the large popcorn bag and the small popcorn bag is _____ cm^2.

14. Which of the following statements is **not** a valid reason for using a representative sample to conduct a survey?

A. It is cheaper to use a sample.

B. There is too much error in a sample.

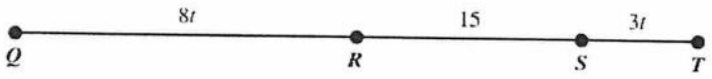
C. There is too much data in the complete population.

D. It is too time-consuming to use the complete population.

2011 - 2012

Use the following information to answer question 1.

Line segment QT is 48 units.



1. Which of the following linear equations represents the length of line segment QT?

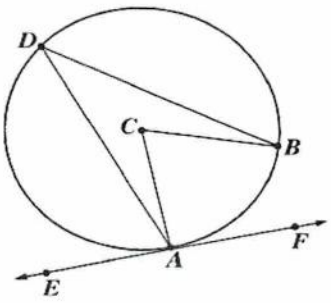
A. $5t + 15 = 48$

B. $11t + 15 = 48$

C. $5t - 15 = 48$

D. $11t - 15 = 48$

Use the following information to answer question 12.



In this diagram, point C represents the centre of the circle.

12. Which of the following rows of terms correctly labels the parts of the diagram above?

Row	$\angle ADB$	$\overline{AD}$	$\angle ACB$	$\overleftrightarrow{EF}$
A.	Inscribed angle	Tangent line	Central angle	Chord
B.	Inscribed angle	Chord	Central angle	Tangent line
C.	Central angle	Tangent line	Inscribed angle	Chord
D.	Central angle	Chord	Inscribed angle	Tangent line

Use the following information to answer question 18.

$3x^2 - 4$

18. Which row correctly shows the degree, the coefficient, and the constant term in the expression shown above?

Row	Degree	Coefficient of x^2	Constant Term
A.	2	3	−4
B.	3	2	4
C.	2	−4	3
D.	3	4	2

Use the following information to answer question 32.

The following list shows Rick's yearly vehicle expenses.

- Insurance: $1 200
- Gasoline: $1 300
- Repairs: $850

32. If Rick works 8 hours/day, 5 days/week, and takes home $10/hour, then what is the **least** number of complete weeks he must work in order to pay for all his yearly vehicle expenses?

A. 6 weeks
B. 7 weeks
C. 8 weeks
D. 9 weeks

6. Which of the following expressions is equivalent to $-(3x - 2)$?

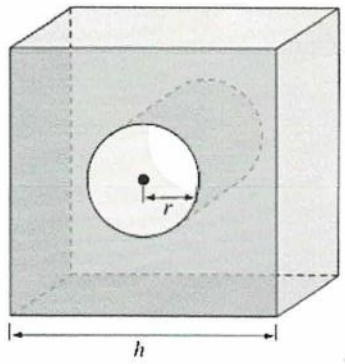
A. $-3x + 2$
B. $-3x - 2$
C. $3x + 2$
D. $3x - 2$

Numerical Response

10. The number of perfect squares that are whole numbers between 2 and 20 is _____.

Use the following information to answer question 13.

The 3-D object below is a **cube** with a right cylinder cut out.



13. Which expression represents the surface area of the 3-D object?

A. $6h^2 - 2\pi r^2 + 2\pi rh$

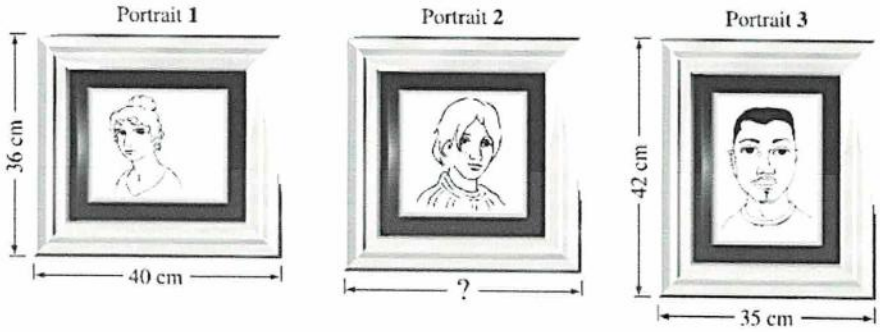
B. $4h^2 - 2\pi r^2 + 2\pi rh$

C. $6h^2 + 2\pi r^2 - 2\pi rh$

D. $4h^2 + 2\pi r^2 - 2\pi rh$

Use the following information to answer numerical-response question 6.

Pat arranges three portraits from smallest to largest based on area. Portrait 2 is square, and its side length, measured in centimetres, is a whole number.



Numerical Response

6. The side length of portrait 2 is _____ cm.