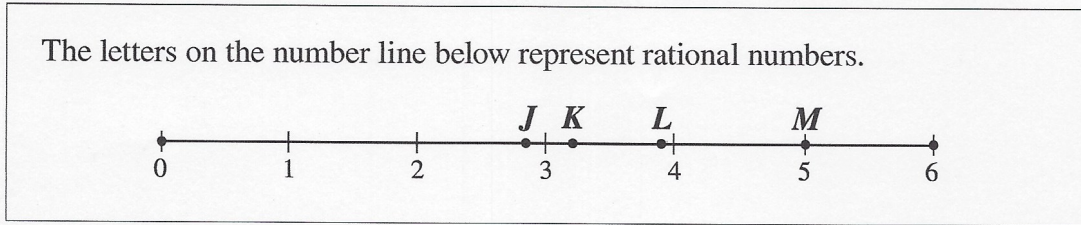
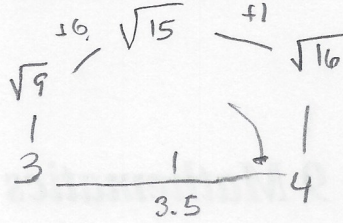


Use the following information to answer question 1.



1. The approximate value of $\sqrt{15}$ is represented by the letter

- A. J
- B. K
- C. L
- D. M



Use the following information to answer question 2.

A truck heads north at a constant speed of 80 km/h. A car leaves 20 minutes later heading north along the same road and travelling at a constant speed of 90 km/h.

2. Which of the following equations could be used to determine how much time in hours, t , the car travels until it catches up to the truck?

A. $90t = 80\left(t - \frac{1}{3}\right)$

B. $90t = 80\left(t + \frac{1}{3}\right)$

C. $90t = 80(t - 20)$

D. $90t = 80(t + 20)$

in an hour
 Same distance $\rightarrow 1 \text{ km}$
 $90t \rightarrow t = 1 \text{ hour}$
 $\left(t - \frac{1}{3}\right) = t - 20$
 $\hookrightarrow \frac{1}{3} (60 \text{ min}) = 20 \text{ m}$

So if $t = 1$
 $90t = 80\left(t - \frac{1}{3}\right)$

4. Which of the following expressions is equivalent to $\frac{40 + 10}{5 \times (6 - 4)}$? **BEDMAS**

- A. $40 + (10 \div 5) \times 6 - 4$ this does not match when using Bedmas
- B. $(40 + 10) \div 5 \times (6 - 4)$ this indicates that $(40 + 10) \div 5$ is done first
- C. $40 + (10 \div (5 \times (6 - 4)))$ this implies that 10 divides $(5 \times (6 - 4))$
- D.** $(40 + 10) \div (5 \times (6 - 4))$

Correct use of brackets; Correct use of BEDMAS

5. If $n = 2$, then which of the following expressions yields the largest result?

- A. $\frac{n^5 \times n^2}{n^4}$ $\frac{n^7}{n^4} = n^3$
- B. $\frac{n^2 \times n^3}{n}$ $\frac{n^5}{n} = n^4$
- C. $\frac{(n^2)^3}{n}$ $\frac{n^6}{n} = n^5$
- D.** $\frac{(n^5)^2}{n^4}$ $\frac{n^{10}}{n^4} = n^6$

Law of exponents
 • Same base
 ↳ multiply → add exponents
 divide → subtract exponents

6. The solution to the inequality $6 - x > -1$ is

- A.** $x < 7$
- B. $x > 7$
- C. $x < -7$
- D. $x > -7$

$$\frac{-x}{-1} > \frac{-1-6}{-1}$$

or

$$x < 1+6 \Rightarrow \boxed{x < 7}$$

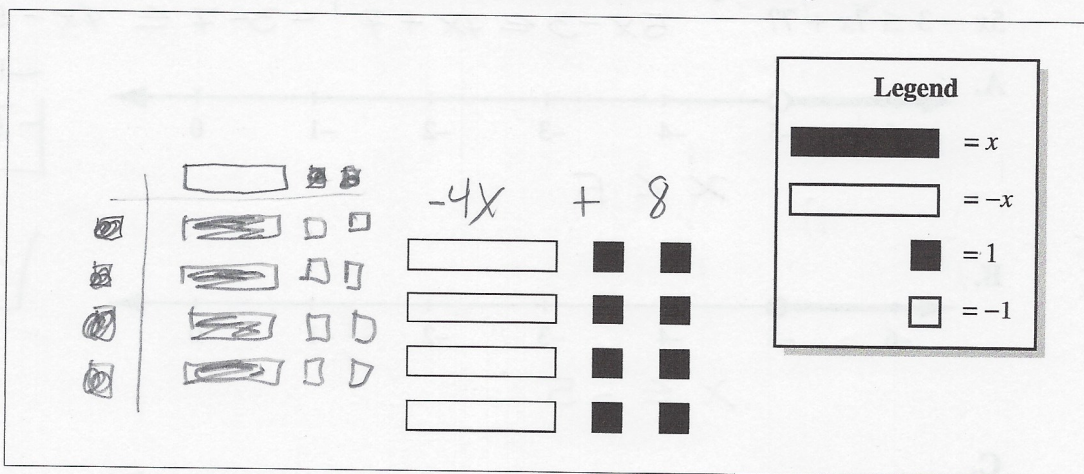
• the inequality sign is reversed because it is divided by (-1)

7. Which one of the following statements is correct?

- ~~A.~~ $4^5 + 4^7 = 4^{12}$
- ~~B.~~ $4^{12} - 4^4 = 4^8$
- C.** $4^2 \times 4^5 = 4^7$ ✓
- D. $4^6 \div 4^3 = 4^2$
↳ 43

Law of exponents
 do NOT apply to subtraction
 and addition.

Use the following algebra-tile diagram to answer question 9.



9. The algebra tile model above could represent the product of

- ~~A.~~ 2 and $(2x + 4) = 4x + 8$
~~B.~~ 2 and $(2x - 4)$
~~C.~~ 4 and $(-x - 2) = -4x - 8$
D. 4 and $(-x + 2) = -4x + 8$

10. If a cube has a surface area of 2.16 m^2 then which of the following equations represents the height, h , of the cube?

A. $h = \sqrt{\frac{2.16}{6}} \text{ m}$

B. $h = \sqrt{\frac{6}{2.16}} \text{ m}$

C. $h = \frac{2.16}{6} \text{ m}$

D. $h = 2.16 \times 6 \text{ m}$

6 faces
 $\frac{2.16}{6} = \text{area of one face}$
 length = $\sqrt{\frac{2.16}{6}}$

$\sqrt{\frac{2.16}{6}} \Rightarrow h$

Use the following information to answer question 12.

Kristy received a speeding ticket for travelling above the posted limit.



12. The inequality that shows the speed, s , that Kristy was travelling at is

- A. $s \leq 100$ km/h
- B. $s < 100$ km/h
- C. $s \geq 100$ km/h
- D. $s > 100$ km/h

$$s > 100 \text{ km/h}$$

• she can travel at 100 km.

13. If the side length of a cube is tripled, then the surface area of the cube will increase by a factor of

- A. 6
- B. 9
- C. 12
- D. 27

$$3n \begin{array}{|c|} \hline \square \\ \hline \end{array} = 9n^2 \times 6 = 54n^2$$

$$\frac{54}{6} = 9n^2$$

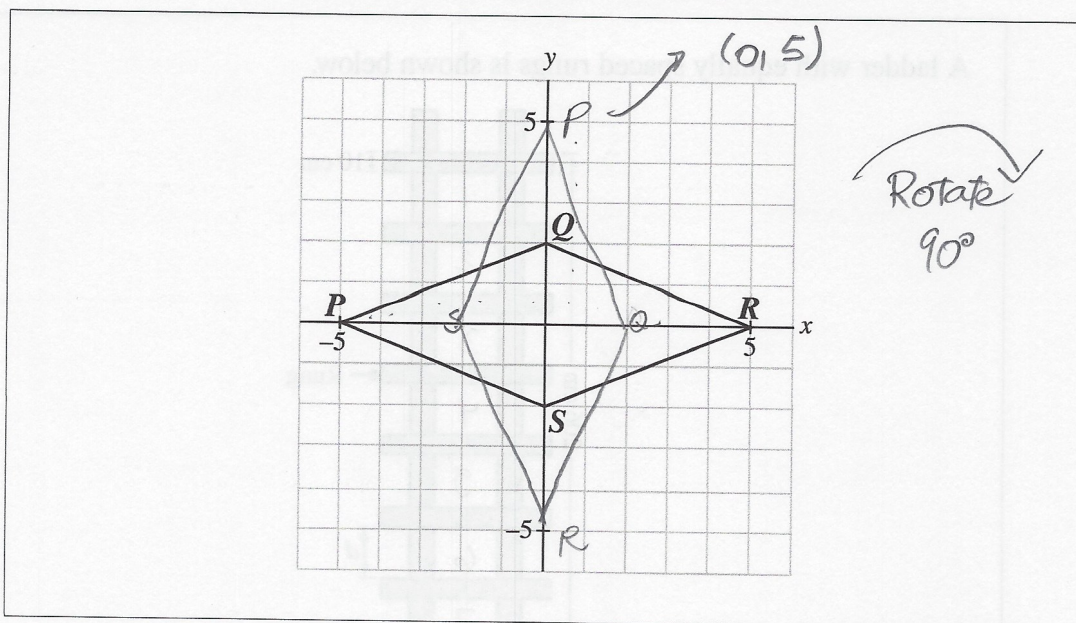
$$n \begin{array}{|c|} \hline \square \\ \hline \end{array} = n^2 \times 6 = 6n^2$$

14. The expression $(3^2 \times 2)^3$ can be simplified to

- A. $3^2 \times 2^3$
- B. $3^6 \times 2$
- C. $3^5 \times 2^3$
- D. $3^6 \times 2^3$

$$3^6 \times 2^3$$

Use the following diagram to answer question 16.



16. If the shape shown above is rotated 90 degrees clockwise about the origin to form the quadrilateral $P'Q'R'S'$, then P' would be located at

- A. (5, 0)
- B. (0, 5)
- C. (0, -5)
- D. (-5, 0)

Use the following information to answer numerical-response question 4.

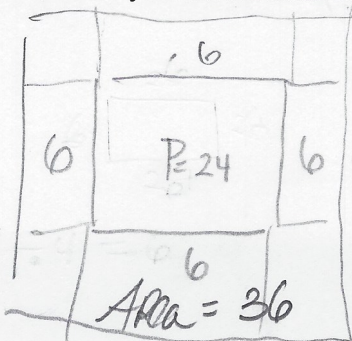
When a square piece of paper is folded in half, the resulting figure has a perimeter of 24 cm.

Numerical Response

Use the concept of similar polygons

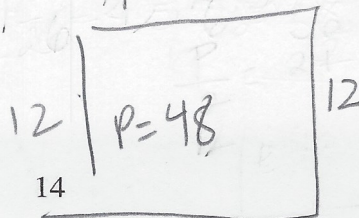
4. The area of the square piece of paper before it is folded is _____ cm^2 .

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



Double perimeter =

$$SF = \frac{48}{24} = 2$$



$$36 - 12 = 48$$

$$l = 6$$

$$A = 4l + 12$$

$$\frac{12}{48}$$

Use the following information to answer question 19.

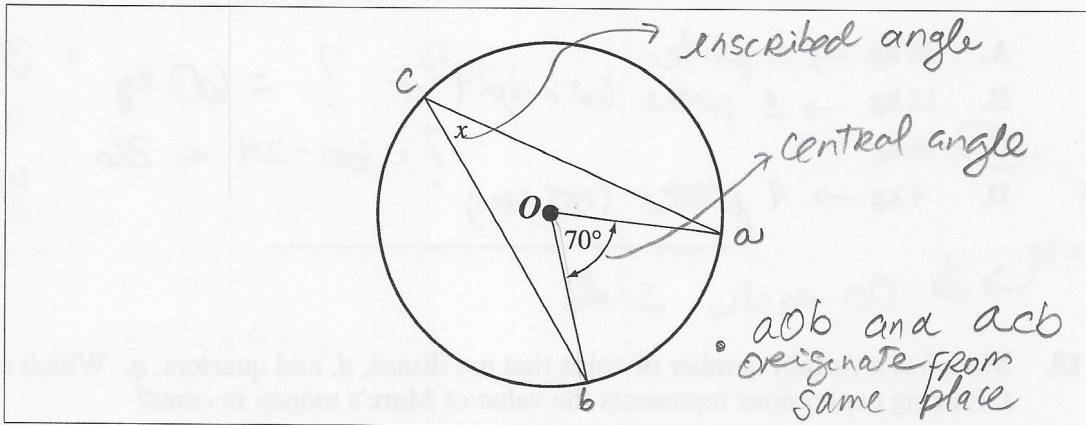
$$3x^2 - 4$$

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

Row	Degree	Coefficient	Constant Term
A.	2	3	-4
B.	3	2	4
C.	2	-4	3
D.	3	4	2

Degree \rightarrow highest exponent = 2
 Coefficient \rightarrow number with variable = 3
 Constant Term = no variable = -4

Use the following information to answer numerical-response question 5.



Numerical Response

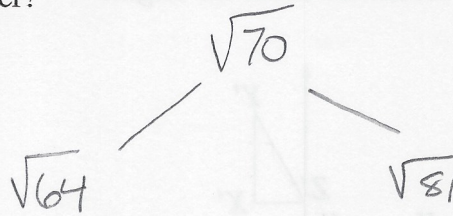
5. If O is the centre of the circle, the measure of x is 35°.

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

$$\text{Inscribed angle} = \frac{\text{Central angle}}{2} = \frac{70}{2} = 35^\circ$$

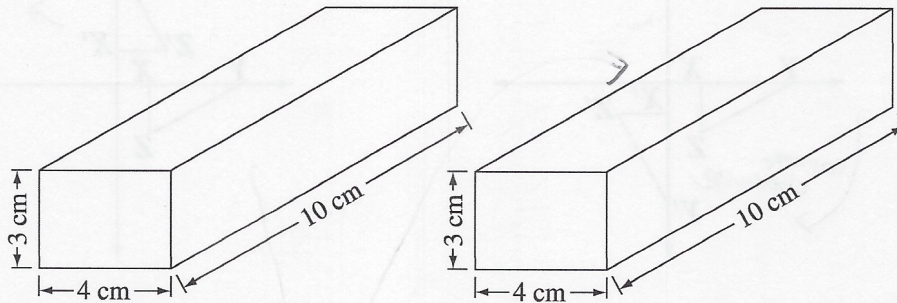
22. In estimating $\sqrt{70}$, which two perfect square numbers provide the best two benchmarks to estimate your answer?

- A. 49 and 64
- B. 64 and 100
- C. 49 and 81
- D. 64 and 81**



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

Darren joins the rectangular prisms shown below to create a new rectangular prism that has the greatest possible surface area. He then paints all visible surfaces. After the paint dries, Darren separates the two prisms.



Numerical Response

Read Carefully

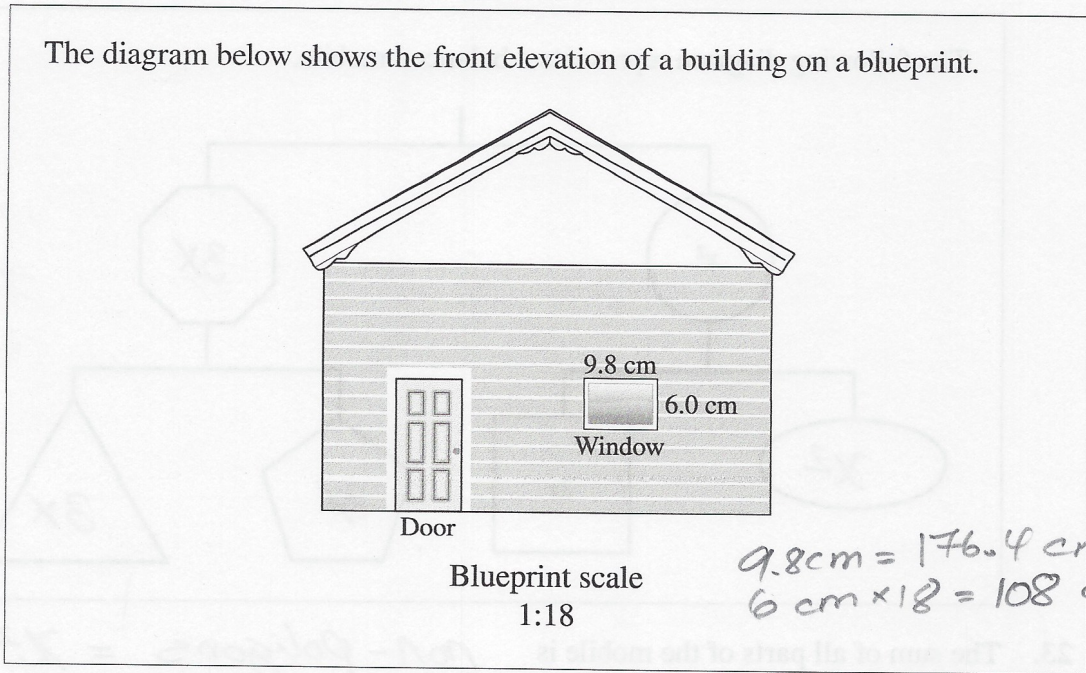
6. The total area of both prisms that has **not** been painted is 24 cm².

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

*greatest possible surface area
 ↳ eliminate smallest areas*

$$3 \begin{array}{|c|} \hline \square \\ \hline 4 \end{array} = 12 \text{ cm}^2 \times 2 = 24 \text{ cm}^2$$

Use the following information to answer question 25.



25. Based on the dimensions shown on the blueprint, the actual dimensions of the window, to the nearest tenth of a metre, will be
- A. 0.5 m × 0.3 m
 - B. 1.0 m × 0.6 m
 - C. 1.8 m × 1.1 m
 - D. 1.8 m × 3.0 m

Use the following information to answer question 26.

The following survey question was given to a sample of Grade 9 students:

Do you prefer to use your television to play childish video games or to watch educational programs?

26. Data collected by this survey may be **most** influenced by a problem related to
- A. ethics
 - B. privacy
 - C. use of language
 - D. cultural sensitivity

Read

Use the following information to answer question 29.

Sandy has a budget of \$100 to spend on back-to-school clothes. The shirts she wants to buy are \$12 each, and the pants she wants to buy are \$25 each. All prices include tax.

29. Which of the following inequalities could be used to determine the maximum number of shirts, n , Sandy can buy if she also buys 2 pairs of pants?

A. $12n - 2(25) \leq 100$

B. $12n + 2(25) \leq 100$

C. $2(25) - 12n \geq 100$

D. $2(25) + 12n \geq 100$

• She can spend 100 or less

$12n$, $(25)2$

$12n + 25p \leq 100$

$12n$

Use the following information to answer numerical-response question 7.

Alan, Bob, and Charles worked together on a job and earned a combined total of \$380. Alan earned \$40 less than Bob. Charles earned twice as much as Alan.

Numerical Response

7. How much did Alan earn?

Answer: \$ 85

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

⁽⁸⁵⁾ Alan + ⁽¹²⁵⁾ Bob + ⁽¹⁷⁰⁾ Charles = 380

$x - 40 + x + 2(x - 40)$

~~$x - 40 + x + 2x - 80 = 380$~~

$2x - 40 + 2x - 80 = 380$

$4x - 120 = 380$

$4x = 380 + 120$

$4x = 500$

$x = \frac{500}{4} = 125$

Alan earned
 $x - 40 = 125 - 40$
 $= \$85$

Use the following information to answer question 31.

Ben was earning a monthly salary of \$5 000 before he changed jobs. At his new job he earns 10% less than he did at his old job.

31. If after one year at his new job Ben receives a pay increase of 15%, how much will he then be earning per month?

- A. \$4 725
- B. \$4 750
- C. \$5 175
- D. \$5 250

$$\begin{aligned}
 10\% &= 500 \\
 \text{New salary} &= \$5000 - \$500 \\
 &= \$4500 \\
 \$4500 &- 100\% \\
 X &- 15\% \quad X = \$675 \text{ increase} \\
 \hline
 \text{total new} &= 4500 + 675 = \$5175
 \end{aligned}$$

32. Jenny notices that a music store is having a “No GST and 40% off the regular price” sale. If the regular price of a CD is \$15.99, then what is the maximum number of sale-priced CDs that Jenny can buy with her \$80 gift card?

- A. 8
- B. 9
- C. 11
- D. 13

$$\begin{aligned}
 \$15.99 &- 100\% \\
 X &- 40\% \\
 \text{Discounted price} &= \$15.99 - 6.396 \\
 &= \boxed{\$9.594} \\
 \frac{\$80}{\$9.594} &= 8.33 \\
 &\rightarrow 8
 \end{aligned}$$

Numerical Response

8. At a picnic for 49 people, 4 families each brought an equal number of lawn chairs. If 5 more lawn chairs were still needed, then how many chairs did each family bring?

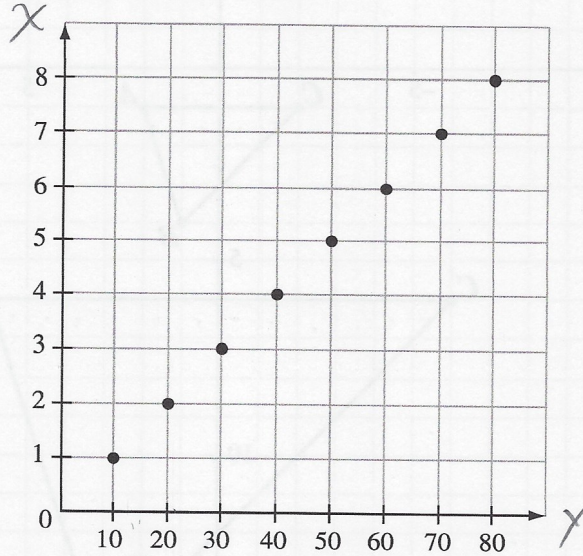
Answer: 11 chairs

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

$$\begin{aligned}
 49 &= 4X + 5 \\
 49 - 5 &= 4X \quad \rightarrow 44 = 4X \\
 X &= \frac{44}{4} = 11 \text{ chairs}
 \end{aligned}$$

Use the following information to answer question 33.

Various points have been plotted on the graph below. The title of the graph and the labels of the axes have been omitted.

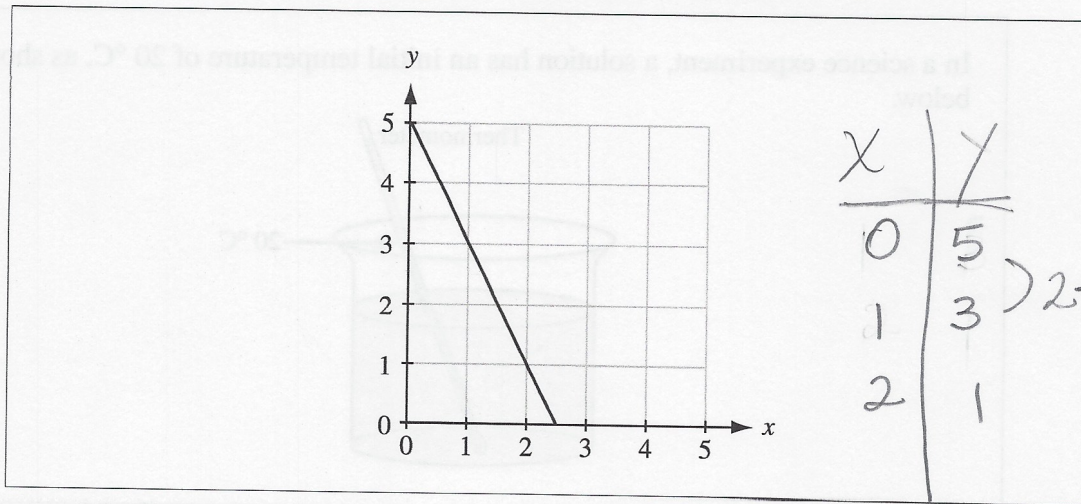


33. Which of the following statements is a possible interpretation of the graph above?

- A. Nicole earns \$20 for each hour she works.
- ~~B.~~ For every 10 swimmers, 2 lifeguards are needed.
- C. For every 10 pieces of candy Simone buys, she pays \$1. ✓
- ~~D.~~ A runner runs at a constant speed of 2 km every 30 minutes.

Multiple-choice question 34 is not being released at this time.

Use the following information to answer question 36.



36. Which of the following equations represents the relationship between the variables x and y in the graph shown above?

- A. $y = 5 - 2x$
 B. $y = 2x - 5$
 C. $y = 5 - x$
 D. $y = x - 5$

$$-2x + 5$$

$$5 - 2x$$

$$2x = 0 \quad (2 \times 0) = 0 + 5 + 5$$

Use the following information to answer question 37.

Population

A school principal asks every student and staff member in the school if they like the idea of school uniforms. The school has 450 students and 30 staff members.

37. The survey above uses a *i* , and *ii* would have the most influence on the data.

The statement above is completed by the information in row

Row	<i>i</i>	<i>ii</i>
A.	sample	students
B.	sample	staff
C.	population	students
D.	population	staff

Use the following information to answer question 39.

Jennifer wants to buy a computer that costs \$2 000, including all taxes. She will make a down payment of \$500 and arrange to make 5 equal payments for the balance owing.

39. Which of the following expressions can Jennifer use to determine the amount of each of the 5 equal payments?

- A. $(\$2\,000 - 500) \div 5$
B. $(\$2\,000 - 500) \times 5$
C. $(\$2\,000 \times 5) - 500$
D. $(\$2\,000 \div 5) - 500$

$$\begin{aligned} \$2000 &= \$500 + 5x \\ \frac{2000 - 500}{5} & \end{aligned}$$

Use the following information to answer question 40.

The following list shows Rick's yearly vehicle expenses.

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

40. 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

$$\begin{aligned} 5 \times 8 &= 40 \text{ hours} \\ 40 \text{ hours} \times \$10 &= \$400 \\ \$1200 + \$1300 + \$850 &= \$3350 \\ \frac{\$3350}{\$400} &= 8.37 \rightarrow 9 \end{aligned}$$

You have now completed the test.
If you have time, you may wish to check your answers.