Cumulative Review of Grade 9 Academic Math

Complete this booklet of questions **without** using your notebook/textbook/friend! **Challenge yourself and prep for the exam.**

Multiple Choice: Choose the **ONE** best answer and write the letter in **CAPITALS** on the line provided.

1. Simplify: $6+(-2)+8$

   A) 16 B) 12 C) 0 D) -2 E) 8 _____

2. Which integer is represented by the square? $-2+\square=-7$

   A) 5 B) 9 C) -9 D) -5 E) NONE OF THESE _____

3. Which expression simplifies to -17?

   A) (-1 + 8) x 5 – 7
   B) -1 + (8 x 5) – 7
   C) -1 + (8 x 5 – 7)
   D) (-1 + 8 x 5) – 7
   E) -1 + 8(5 – 7)

   _____

4. Reduce $\frac{-18}{24}$ to lowest terms:

   A) $\frac{3}{4}$ B) $-\frac{9}{12}$ C) $-\frac{3}{4}$ D) $\frac{9}{12}$ E) $-\frac{6}{8}$ _____

5. What is the negative reciprocal of $-\frac{5}{3}$?

   A) $\frac{5}{3}$ B) $-\frac{3}{5}$ C) $\frac{3}{5}$ D) $-\frac{5}{3}$ E) NONE OF THESE _____

6. Evaluate $\frac{2}{3}m+\frac{7}{11}p$ for m = -27 and p = 22:

   A) -32 B) 4 C) $\frac{50}{7}$ D) 32 E) -4 _____

7. Which term is the unlike term?

   A) -4p B) -p C) 27p D) 4p E) -4 _____

8. A rectangle has a length of 2x - 3 and a width of 3x. Which simplified expression represents the perimeter of this rectangle?

   A) 3x(2x – 3)
   B) 2(3x) + 2(2x – 3)
   C) 6x + 4x – 6
   D) 10x – 6
   E) $6x^2 – 6x$

   _____

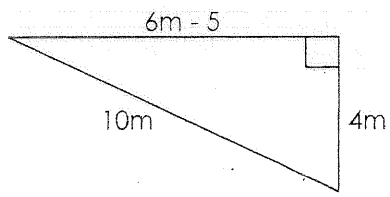
9. Which of these equations is **NOT** a linear relation?

   A) y = 2x + 1 B) $y = 3x^2 + 7$ C) 4x – 2y = 7 _____
   D) 9x – y = 4 E) 5x + 7 = y

10. What is the area of this triangle?

    A) 24m – 20 D) 6m – 1
    B) $12m^2 – 10$ E) 16m - 1
    C) 10m – 5

    _____



11. Solve: $-3y+4=-5y-2$

A) 3 B) 1 C) -3 D) 0.75 E) -1 _____

12. Solve: $\frac{a-2}{5}=\frac{5-2a}{4}$

A) $\frac{7}{3}$ B) $\frac{-16}{7}$ C) $\frac{9}{2}$ D) $\frac{30}{13}$ E) $\frac{33}{14}$ _____

13. Solve: $-5(4-2r)-2=2(r+5)$

A) 4 B) 2.5 C) 6.75 D) -4 E) -2.5 _____

14. Jennifer is twice as old as Peter. If the difference between their ages is 15 years, what is Peter's age? If x represents Peter's age, which equation will help solve the problem?

A) $2x+x=15$ B) $x(2x)=15$ C) $2x=15-x$

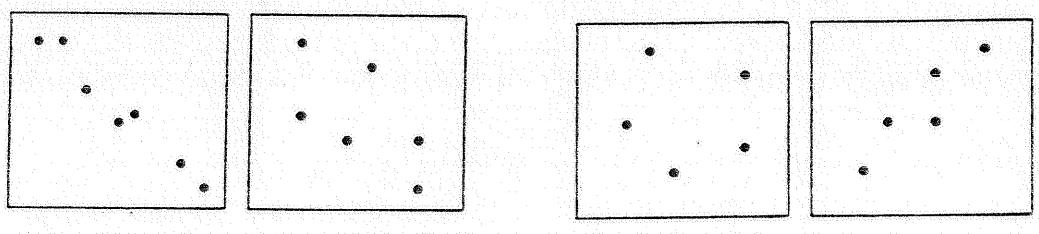
D) $x-\frac{1}{2}x=15$ E) $2x-x=15$ _____

15. Simplify: $\left(-5y^2\right)\left(4y^5\right)$

A) $-20y^{10}$ B) $-y^7$ C) $-20y^7$ D) $-y^{10}$ E) $-20y^3$ _____

16. Which of the following scatter plots show a weak negative correlation? _____

A) B) C) D)



17. Which statement below is TRUE about 3x + 0.5y – 5 = 0?

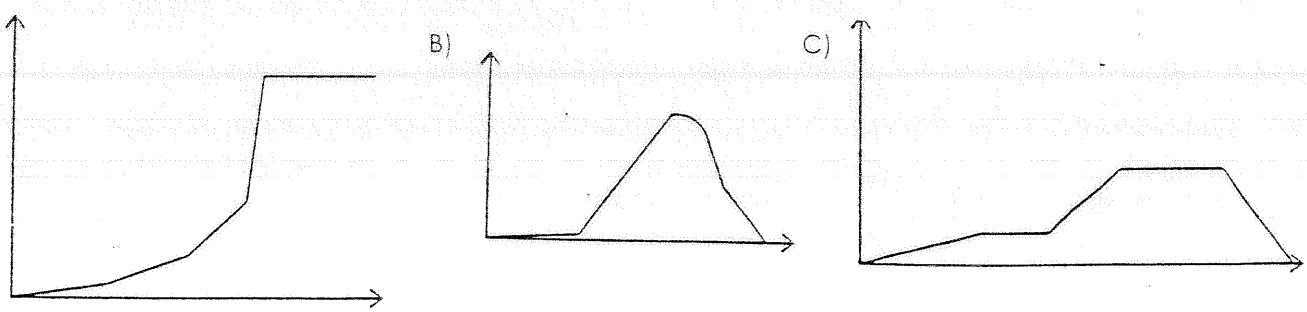
A) It is a linear equation in standard form.
B) It is the same line as y = 6x + 10.
C) The slope is 3 and y-intercept is 10.
D) The slope is -6 and y-intercept is 10.
E) Both B and D are true statements.

_____

18. Choose the graph below which best describes this story:
"Hermione walks to the Hogworth's School of Wizardry at a steady pace. She waits once for a stop light and continues to school at a faster pace. After being at school, she returns home without stopping or slowing down."

_____

A) B) C)

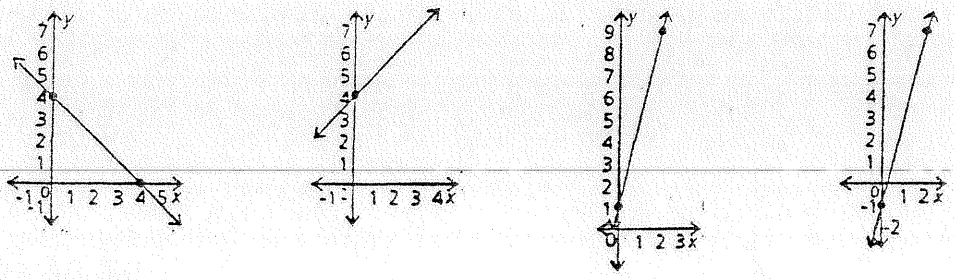


19. _____ lines have a slope that is undefined.

A) parallel B) perpendicular C) horizontal D) vertical _____

20. Match the equation y = 4x + 1 to its graph below. _____

A) B) C) D)



SHORT ANSWER:

1. Evaluate:

a) $\left(6\frac{3}{4}-\frac{-5}{8}\right)\div 2\frac{1}{3}$ b) $2^4+\left(\frac{1}{2}\right)^2-1\times\frac{1}{2}$ c) $\left(x^5\right)^2\left(x^7\right)^3\left(x^2\right)^6$

2. Simplify: $\dfrac{\left(6x^5y^4\right)\left(8y^3x^4\right)}{\left(3x^7y^6\right)}$

3. Frodo runs one kilometre each day as part of his daily exercise. The graph shows his distance from home as he runs his route.

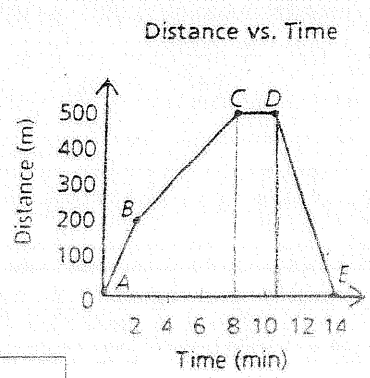
a) Between what two points does Frodo run the fastest? _____

b) What was Frodo's fastest speed? _____

c) How long does it take him to run the kilometre? _____

d) During which phase does Frodo run the slowest? _____

e) What is his speed during the slowest phase? _____



4. Use the data in the table to answer each question:

Time (s)	0	1	2	3	4	5	6
Distance (m)	0	4	8	12	16	20	24

a) Which quantity is the independent variable? _____

b) Is this relationship linear or non-linear? _____

c) Is this an example of a direct or partial variation? _____

5. A line passes through the points A(1, -3) and B(3, 5).

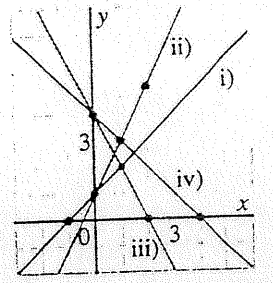
Find:

a) the slope of the line

b) the equation of the line in the Slope-y-intercept form: y = mx + b

c) the equation of the line in Standard form: Ax + By + C = 0.

6. Match each line with its corresponding equation.



a) $y = -x + 4$ _____
b) $y = x + 1$ _____
c) $y = 2x + 1$ _____
d) $Y = -2x + 4$ _____

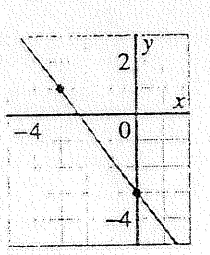
7. Determine whether the points A(1, 4), B(-2, -5) and C(4, 12) are all on the same line; it they are, they are known as "collinear points".

8. Graph the line represented by each equation:
a) $y = 2x - 3$ b) $y = -2/5x + 2$

9. State the slope and the y-intercept of the line represented by each equation:
a) $y = 4x - 5$ b) $y = -\frac{2}{3}x$ c) $y = 5$ D) $x = -3$

10. Determine the equation of each line:
a) the line with slope of -3 and y-intercept of 2

b)

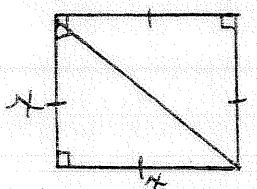


c) the line with slope -4 and that passes through the point (2, -3)

11. Does the point (3, -2) lie on the line $y = -\frac{2}{3}x - 1$? Explain.

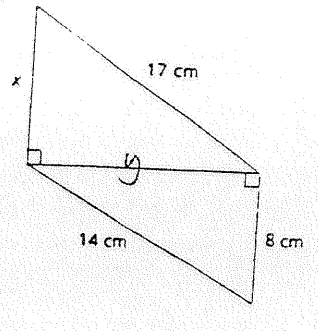
PROBLEM SOLVING:

1. Thomas is constructing a square window for use as a stage prop for the school play. The diagonal of this square window is 50 cm. Find the perimeter of this window.



2. Find the equation of the line that is parallel to $y = 3x + 17$ and has an x-intercept -2. Write the equation in slope-y-intercept form.

3. Find the length of the missing sides accurate to one decimal place.



4. Ontario Express charges $5 plus $1/kg to send a package out of the province. Day by Day Delivery charges $3.50 plus $1.25/kg.
   a) Write equations to model these two situations where "C" is total cost and "m" is delivery charge per kg.

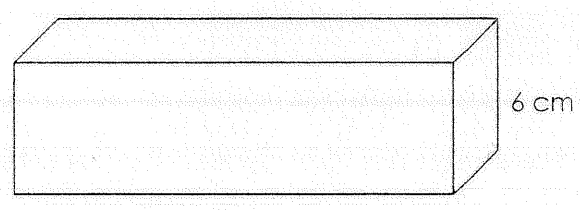
   b) Graph both equations on the same set of axes.
   c) What does the point of intersection mean in this situation?

   d) What advice would you give to someone who is planning on sending a package out of the province?

5. Your distance, d kilometres, from a flash of lightning varies directly with the time interval, t seconds, between your seeing the flash and hearing the thunderclap. When the time interval is 5 s, you are 1.75 km from the lightning.
   a) Create a table of values for the relation.
   b) Graph the relation.
   c) Use the graph:
      i) Determine how far you are from the lightning when the time interval is 2 s.
      ii) Determine the time interval between seeing the flash and hearing the thunderclap when you are 2.5 km from the lightning.
   d) Determine the equation that relates d and t.

6. The mass, M, in grams of a candy box is given by the equation $M = 8c + 4$, whre "c" is the number of candies in the box.
   a) What would be the mass of a box of candies with 20 candies in it?
   b) If a full box of candies weighs 339g, how many candies would the box contain?
   c) Graph the relation (on a separate piece of paper).
   d) Explain how the graph would change if each candy weighed **TWICE** as much.
   e) State the equation for the relation if the weight of the candies were doubled.
   f) Explain how the graph would change if the weight of the box was **cut in half**.

7. a) Calculate the **volume** of the square-based prism.



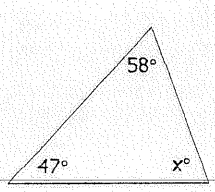
   b) Calculate the **surface area** of the pyramid that would just fit inside this prism.

Worksheet Triangle Sum and Exterior angle Theorem Name _____

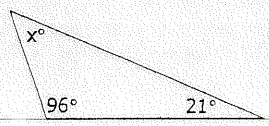
Period _____

I. Find the value of "x".

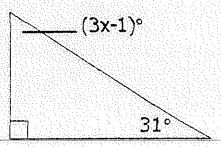
1) x = _____



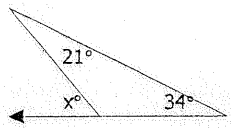
2) x = _____



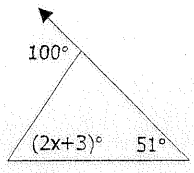
3) x = _____



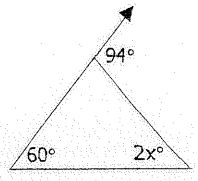
4) x = _____



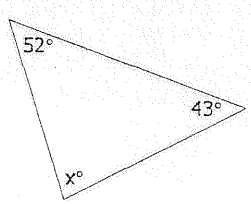
5) x = _____



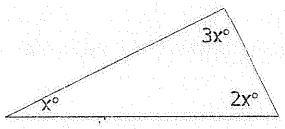
6) x = _____



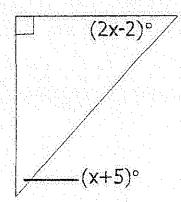
7) x = _____



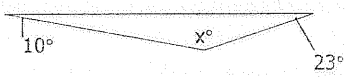
8) x = _____



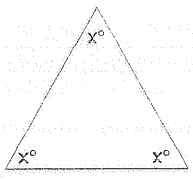
9) x = _____



10) x = _____



11) x = _____



12) x = _____