Name: _____

Mrs. van der Vossen
Math 9

Year End Review 2018-2019

Rational Numbers

1. Organize in ascending order:

$\frac{3}{4}$ $\quad 0.77 \quad$ $-\frac{4}{5}$ $\quad \frac{1}{5} \quad$ $\frac{1}{2}$

2. Write a decimal between:

$-1\frac{2}{5} \quad -1\frac{3}{5}$

3. Write a fraction between:

$0.3 \quad 0.5$

4. Solve (No Calc):

a. $-2.7 + 3.8 =$

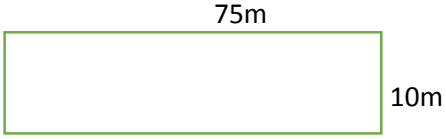
b. $\left(\frac{-2}{5}\right) + \left(\frac{-1}{15}\right) =$

c. $2\frac{4}{7} \times \left(-\frac{2}{3}\right) =$

d. $9^2 - (-4)^3 \div 8 =$

e. $(4+3)^2 - 40 =$

5. Explain the difference between perimeter and area using the shape below.



6. Show how 0.16 is a perfect square.

7. If the sales tax in the province changes to 6½%, what is the tax you would pay on a pair of shoes that cost $82? What is the total cost of your new shoes?

Exponent Laws

8. Identify the following in the examples below: exponent, power, variable, coefficient
   a. 4^3 b. f^5 c. -9^2

9. Complete the table below

	Repeated Multiplication (AS SHOWN IN FIRST COLUMN)	Simplified Power	Evaluate
$(-6)^4$		$(-6)^4$	
-6^4		-6^4	
$2(3^4)$		$2(3^4)$	
$[(-5)^3]^2$			
$\left(\frac{1}{5^2}\right)^3$			
$\frac{(5^6)(5^4)}{(5^{10})}$			
	SINGLE Power	Evaluate	
$-1 \times 2^3 \times 2^2$			
$(3^3)^2 \times 3$			

10. A population of 40 bacteria doubles every $30\ minutes$. How many bacteria will be in the population after: (2 marks)

a. $90\ minutes$ b. $2\ ½\ hours$

Expressions - Polynomials – Add Subtract Multiply and Divide

11. Complete the table:

Expression	Number of Terms	Type of Polynomial	Degree of Polynomial
$7x^2 + 3x$			
$5a - 4b + 8$			
$350x$			

12. Collect like terms:

a. $3x^2 - x^2 + 2 + 18$ b. $-3x^2 - 4x + 5x^2 - 7 + 3x - x^2$

13. Simplify:

a. $(4x^2 + 3x) + (-12x + 3x^2)$ b. $(3n^2 + n - 8) - (5n^2 + 8n - 3)$

14. Distribute:

a. $4(x + 2)$ b. $8x\left(\frac{3}{4}x - 8\right)$

15. Simplify: $\frac{15x^2+10x}{5x}$

16. If $x = 4$ and $y = -2$, evaluate the following:

a. $3x - 5y$ b. $-2x - y^2$

Equations – Solving

17. Solve the following:

$\frac{1}{2}x = \frac{4}{12}$	$\frac{5}{x} = 1\frac{3}{7}$	$\frac{x}{2} + \frac{2}{3} = \frac{1}{6}$
$\frac{3}{4}(x+3) = \frac{5}{2}$	$\frac{(m-0.54)}{4.3} = -7.8$	$4.5x - 5 = 2.75x - 1.5$

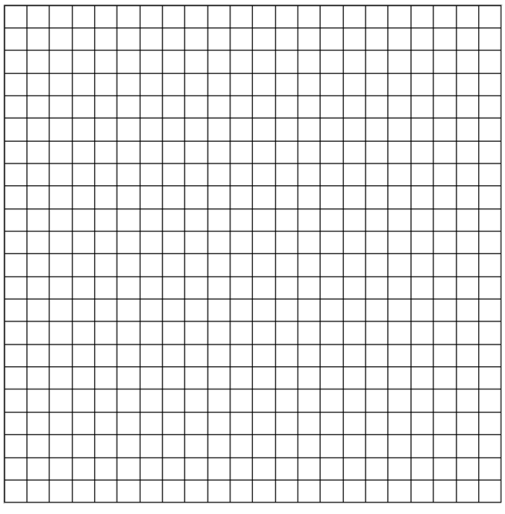
18. Write an equation and solve:
    a. If you triple a number then decrease by fourteen, the result is negative nineteen.

    b. The mean of three numbers is 5. If one number is negative four and another is positive five, what is the third number.

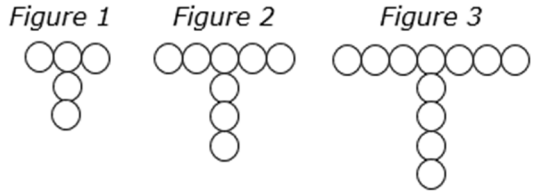
Linear Relations - Graphing

19. Graph the equation below. $y = \frac{1}{2}x - 4$

    a. Use the graph to find the value of y if $x = -8$
    b. Use the graph to approximate x if $y = 0.5$
    c. Where did you interpolate? Extrapolate?



20. Use the following figures to answer the questions below.



a. Complete the table of values to show the number of circles in relation to the figure number.

b. Develop an equation that can be used to determine the number of circles in each figure.

c. How many circles would be found in figure 30?

d. Which figure would have 137 circles?

Finance

21. What is the formula to find simple interest and what do the variable stand for?

22. How much money will you have in your bank account after 5 years if you started with an amount of $\$3{,}545$ at a rate of 7%? (assume you do not touch the money over the term)

Central Tendency

22. Find the mean, median and mode for this set of numbers:

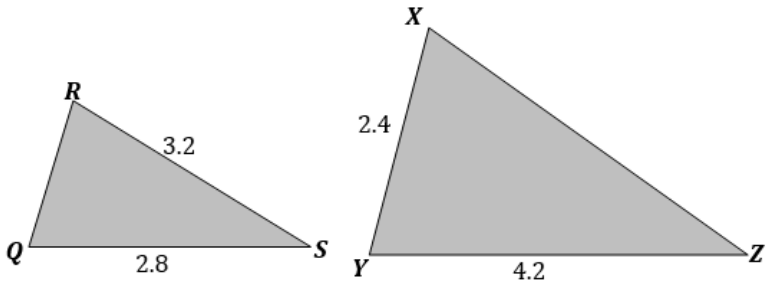
4, 5, 6, 3, 7, 4, 4, 6, 7

Similar Figures

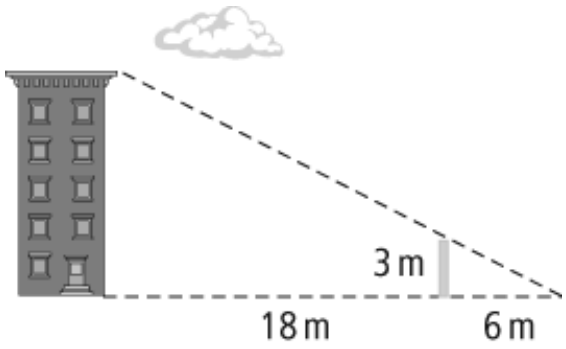
23. Find the missing values:

a. $\frac{12}{34} = \frac{x}{238}$ b. $\frac{5}{98} = \frac{25}{x}$

24. Find the length of sides XZ and RQ.



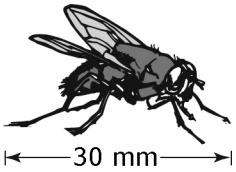
25. What is the height of the building?



Scale

26. What is the formula used to determine scale?

27. The scale for the enlarged image of a housefly is $1:0.25$.



28. An actual laptop has a width of 37.8 cm. Calculate the scale factor used in the image of the laptop. Express the answer to the nearest tenth.