June 2020 St. Stephen's School

Summer Assignment – Algebra/Geometry

Note: You should be able to do these exercises without a calculator

1) Operations with Integers

$7 + (-9) =$

$12 - 19 =$

$0 - 8 =$

$-9 — 13 + (-4) =$

$-39 - (-32) - 14 =$

$(-8)(3) =$

$-7 \cdot (-5) =$

$(-3)(-1)(4)(-6) =$

$\frac{-24}{-4} =$

$49 \div (-7) =$

2) Operations with Decimals

$5.1 + 2.23 + 8 =$

$9.7 - 7.087 + 5.3584 =$

$3.8 \cdot (-5.4) =$

$735 \cdot 0.01 =$

$5 \cdot 0.5 =$

3) Operations with Fractions

Note: the result should be a fraction, simplified as much as possible (see next exercise)

$\frac{3}{5} + \frac{2}{7} =$

$\frac{5}{12} - \frac{7}{18} =$

$2 + \frac{5}{21} - \frac{3}{7} =$

$\frac{4}{7} \cdot \frac{3}{11} =$

$\frac{12}{81} \cdot \frac{9}{36} =$

$\frac{6}{11} \div \frac{5}{33} =$

4) Simplifying Fractions

$\frac{4}{20} =$ $\frac{25}{75} =$ $\frac{36}{42} =$ $\frac{81}{9} =$

$\frac{2a}{8a} =$ $\frac{3ab}{5b} =$

5) Exponents

$6^2 =$ $-4^3 =$ $-2^6 =$ $15^1 =$

$24^0 =$ $(2^2)^3 =$ $a^6 \cdot a^3 =$ $\frac{b^5}{b^7} =$

6) Radicals

$\sqrt{81} =$ $\sqrt{121} =$ $\sqrt{5^2} =$ $\sqrt{25 \cdot 3} =$

$\sqrt[3]{7^3} =$ $\sqrt{w^2} =$ $\sqrt{a \cdot t^2} =$ $\sqrt[n]{q^n} =$

7) Order of Operations

$2 + 6 \div 3 - 2 \cdot 5 =$

$2 \cdot (5 - 2)^2 - 12 \div 2 =$

$\frac{16}{8} + 2^3 - 12 =$

$\frac{16}{8+2^3 - 12} =$

$\frac{16}{8 + 2^3} - 12 =$

8) Distributing

$3(4 + a) =$

$-(y - 9) =$

$-2(3y - 9) =$

$4x(-x + 8) =$

$(t - 2)(-t^2) =$

$(3 - a)(2 + b) =$

9) Adding Like Terms

Note: if necessary, distribute before adding like terms

$5 - 4a + 7 - a =$

$-11 + t^2 + 15 - 2t - 5t^2 =$

$(x + 4)(3 - x) =$

$(a + 2b)(3a - b) =$

10) Algebraic Expressions - Evaluating

Evaluate the following expressions for the given value(s) of the variable(s)

$2x^2 - 11$, when $x = 3$

$3x \div 2 - 7$, when $x = 6$

$\frac{x}{y} \cdot 7$, when $x = 4$ and $y = 14$

$\frac{4}{5} \div t + \frac{3}{5}$, when $t = 4$

11) Algebraic Expression – Writing

Write the following verbal phrases as an algebraic expression:

Four times a number *x* decreased by twelve	
Five squared minus a number *a*	
Twenty-nine decreased by triple a number *x*	
The quotient of negative one and number *x* decreased by two	
Three fifths increased by product of a number *x* and seven	
Five times square root of two	

12) Algebraic Expression - Simplifying

Simplify each expression (add like terms, distribute or both)

$6k + 1 + 4k =$

$2 - 3x + 8x =$

$6 - x + 1 - 14x =$

$(3s - 2)s - 4s^2 =$

$(5 - 2y)4 + 4y - 2 =$

$4n^2 - n(n - 9) =$

13) Solving Linear Equations

Solve each linear equation

$-4k = -12$

$1 + 8x = 9$

$\frac{x}{4} = \frac{13}{2}$

$2 - (3s - 2) = 3$

$-18 = a + (-3)$

14) Solving Word Problems

Write an equation for the following problems and solve it

- Maria is baking cookies. The recipe calls for $4 + \frac{5}{6}$ cups of flour. She has already put in three full cups and a one-fourth of a cup of flour. How many more cups does she need to put in?

- How old is Ayse if she will be 50 years old in thirteen years?

15) Cartesian Plane – Plotting Points

On a separate sheet of graph paper, draw a Cartesian plane (aka x-y plane, aka coordinates plane) and plot the points with the given coordinates

B(-3,6) O(5,-4) I(7,0) N(-6,-2) G(0,4)

16) Cartesian Plane – Plotting lines

a) Given the line with equation $y = -2x + 5$ complete the table evaluating the value of *y* for the each indicated value of *x*. Then plot the line on a Cartesian plane on a separate sheet of graph paper

x	y
-3	
-1	
0	
2	
4	

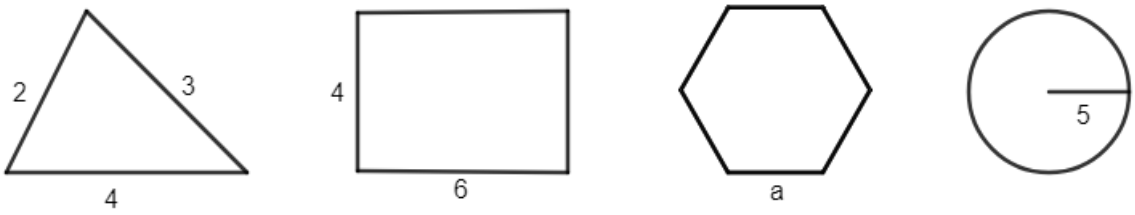
b) Plot the following lines on a Cartesian plane on a separate sheet of graph paper

$y = x$ $y = 3x + 1$

$y = -\frac{1}{2}x - 2$ $y = 5$

17) Calculating Perimeters of Geometric Shapes

Calculate the perimeter of the following shapes



18) Calculating Areas of Geometric Shapes

Calculate the area of the following shapes