VILLA VICTORIA ACADEMY (2020)
PREPARATION AND STUDY GUIDE
ENTRANCE TO ADVANCED ALGEBRA 1
FROM PRE-ALGEBRA

1) Write an expression for the following:
   Sean has *a* dollars which is $8 more than Tina. Write an expression which gives the amount of money that Tina has in dollars?

2) Complete the following:
   $$a) -12 + (-17) \qquad b) -12 - (-17) \qquad c) -3 - 15$$

3) If there are 12 eggs in a dozen, write an expression for the number of dozens in e eggs.

4) Simplify: $7 \bullet 3 - 4 - (3 + 2) - 1.$

5) Insert grouping symbols to make the number sentence true.
   $$2 \bullet 6 + 5 - 4 \bullet 2 = 14$$

6) Evaluate $\dfrac{h + 4}{j}$, for $h = 14 \; and \; j = 3.$

7) If you earn d dollars working 40 hours. Write an expression which describes how much you earn per hour.

8) Evaluate $4(a + b),$ *for* $a = -11; b = 4.$

9) Which symbol, $\{ >, <, =, + \}$, makes $15 - (-7) \; ? \; -2(11)$ a true statement?

10) Use the distributive property to simplify this expression: $4(98)$

11) Simplify the expression: $5 - 2(m + 3) - m.$

12) Solve each equation. Display all steps.
    $$a) \, h - 6 = 27 \qquad b) \, 16 + m = 36 \qquad c) \, \frac{a}{8} = 6 \qquad d) -4a = 56$$

13) Solve each inequality. Display all steps.

    $$a) \, 19 > y + 7 \qquad b) \, a - 12 < -23 \qquad c) \, \frac{a}{11} \le -4 \qquad d) -5a \le -50$$

14) Simplify the following:
    $$a) \; 36 \div (-2) + 4 \bullet 3 \qquad b) \, 12 - (-3) + 4(3 - 1)$$

15) Determine the number of hours it would take to drive 168 mi at an average rate of
    $48 \, \dfrac{mi}{h}.$ Use the formula $d = rt.$

16) Solve the following:

$a)\ a - 5.07 = 7.23$ $b) -3t = 0.174$ $c)\ a - 5.04 = -12.43$ $d)\ \dfrac{a}{-3.2} = 1.6$

17) Using the data: 94; 85; 86; 92; 86; determine the following.
  a) mean   b) median   c) mode
18) Simplify:

$a) -2y - (3k - 2y) + 3k$ $b) -6 \bullet m \bullet m \bullet n \bullet 3 \bullet m$ $c) \dfrac{m^4 n^5}{m^6 n^2}$

$d)\ x^6 \bullet y^2 \bullet x^3 \bullet y$ $e)\ \dfrac{w^{10} y^{12} z}{w^6 z^5}$ $f)\ 5^{-2}$ $g)\ (x^7)^2$ $h)\ 5^3 \bullet 5^0$

19) Determine all the factors of 56.

20) Determine the GCF of $12x^3\ and\ 32xy$.

21) Is this number divisible by both 2 and 3?   58, 404

22) Determine the sum in simplest form for: $\dfrac{3}{4}, \dfrac{5}{8}, and\ \dfrac{1}{6}.$

23) Determine the prime factorization of 72 in exponential form.

24) Determine the following in simplest form:

$a)\ \dfrac{7}{12} + \dfrac{5}{8}$ $b)\ \dfrac{5}{9} - \dfrac{5}{6}$ $c)\ \dfrac{7}{10} + 2\dfrac{7}{12}$

25) Complete the following:

$a)\ 3\dfrac{1}{2}\ ft\ =\ ?\ in$ $b)\ 9\ qt. =\ ?\ gal.$

26) Write each decimal as a fraction in simplest form.

$a)\ 0.55$ $b)\ 0.1\overline{3}$

27) Simplify the following:

$a)\ \dfrac{4}{5}(6-11)^3$ $b)\ \dfrac{5}{7} \div \left(\dfrac{2}{3} + \dfrac{1}{6}\right)$ $c)\ (6k)^2$ $d)\ \left(\dfrac{-x}{3}\right)^4$ $e)\ \left(\dfrac{2m}{n^2}\right)^3$

28) Solve the following:

$a) - 6n = - 31.26$ $b) \ n\% \ of \ 50 \ is \ 20.7$ $c) \ Find \ 70\% \ of \ 60$ $d) - 4\dfrac{1}{6}x = 25$

29) Write each number as a percent, round to the nearest tenth of a percent if necessary.

$a) \ 0.039$ $b) \ \dfrac{14}{25}$ $c) \ \dfrac{8}{33}$

30) Convert 0.25% to a fraction.

31) Solve the following equations:

$a) \ 3y - 9 = 6$ $b) \ 3(x + 7) + 2(x - 5) = x - 5$ $c) \ \dfrac{2}{3}p + 12 = \dfrac{1}{3}p + 10$

$d) \ 0.2n + 13 = 1.3n - 14.5$ $e) \ \dfrac{1}{2}(e - 6) = \dfrac{1}{4}(e + 8)$