The Academy SPS Summer Math Assessment

The following assessment will be used to decide what particular math skills you will be focusing on this summer. Remember to **SHOW ALL OF YOUR WORK**! Relax and do the best you can!

Solve the following linear equations for x

1) $x + 4 = -31$

2) $4x = 28$

3) $7x + 5 = 26$

4) $10x + 2 - 4x = 44$

5) $11x - 4 = 3x + 12$

6) $9(x - 2) = 45$

7) $\dfrac{x + 5}{3} = 12$

8) $-x^2 - 3 = -84$

9) $\sqrt{x + 17} = -9$

Factor the following expressions (Hint: There are special formulas for #10 and #13; for #14 and #15 try factoring by grouping)

10) $x^3 - y^3$

11) $2x^2 + 9x - 5$

12) $x^2 + 3x - 10$

13) $9x^2 - 16$

14) $4x^2 + 20xy - 3xy - 15y$

15) $x^3 - 5x^2 + 3x - 15$

Simplify the following expressions by combining like terms

16) $\sqrt{12} + 5\sqrt{3}$

17) $\sqrt{3^2 + 5 \cdot 11 - 2^2 + 14 + (-1)^2}$

18) $13x^2y - 3xy + 2y - 9x^2y + 10xy$

19) $\dfrac{x + y}{x^2 + 2xy + y^2}$

Answer each question below by selecting True or False. If you choose False, explain why the statement is not true.

20) **True or False**: Suppose $m\angle A = 71°$, then $\angle A$ is an **obtuse** angle.

21) **True or False**: Suppose $m\angle B = 110°$. If $\angle C$ is the **complement** of $\angle B$ then $m\angle C = 70°$.

22) **True of False**: If line l has a slope of 3 and line m has a slope of 3 then lines l and m are **parallel**.

23) **True or False**: If line l has a slope of 3 and line m has a slope of $\frac{1}{3}$ then lines l and m are **perpendicular**.

24) **True or False**: The linear equation $4y = 8x + 4$ has a slope of 8.

25) **True or False**: Consider $f(x) = x^2$. Then the graph $g(x) = (x-1)^2 + 2$ shifts $f(x)$ one unit to the left and two units up.

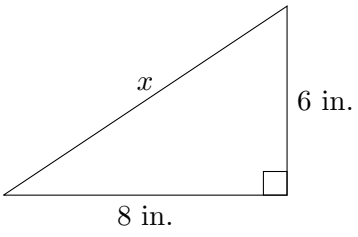
Answer each question below

26) Solve for c in the equation $z = bx + cy$

27) Find $f(-2)$ for the function $f(x) = 2x^2 - 8x$

28) Given $f(x) = 2x + 3$ and $g(x) = -x^2 + 5$ find the composition $(f \circ g)(x)$.

29) Find the value of the missing side in the triangle below:



30) Find the area of the triangle above.