

Pre-Algebra Team Solutions

1.

A) $2(x+2)-4x = 2x+4-4x=4-2x$

B) $2x(x+2)+3(x+2)=2x^2+4x+3x+6=2x^2+7x+6$

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

D) The terms involving x cancel out, 2009.

2.

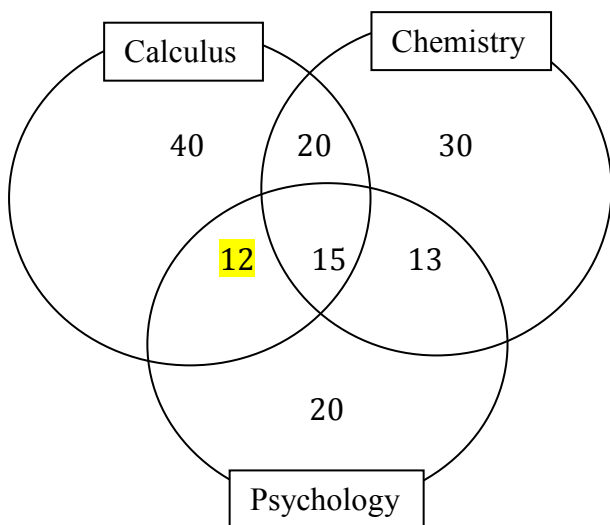
A: $g(2) = 3(2) + 2 \Rightarrow 8$; $f(8) = (8)^2 + 10(8) \Rightarrow \mathbf{144}$

B: $g(12) = 3(12) + 2 \Rightarrow \mathbf{38}$

C: $f(7) = (7)^2 + 10(7) \Rightarrow \mathbf{119}$

D: $f(-6) = (-6)^2 + 10(-6) \Rightarrow -24$; $g(-24) = 3(-24) + 2 \Rightarrow \mathbf{-70}$

3. Refer to the Venn Diagram below. A. 78 B. 35 C. 12 D. 63



4.

A: **False.** The cube with a surface diagonal of length $5\sqrt{2}$ has a side length of 5. Thus the volume would be 5^3 or 125.

B: **True.**

C: $\frac{59 + 65 + 97 + 54}{4} = 68.75$ **True.**

D: **True.**

5.

A: $\left(\frac{1+(-7)}{2}, \frac{4+8}{2}\right) \Rightarrow (-3, 6)$; The ordinate is **6**.

B: $\sqrt{(5 - (-1))^2 + (2 - (-6))^2} \Rightarrow \sqrt{36 + 64} \Rightarrow \sqrt{100} \Rightarrow \mathbf{10}$

C: $m = \frac{7-3}{3-0} \Rightarrow \frac{4}{3}$

D: **0**

6.

A: $x^2 + 5x + 6 \Rightarrow (x + 3)(x + 2)$; $(-3)(-2) = \mathbf{6}$

B: $x^2 + 7x + 12 \Rightarrow (x + 3)(x + 4)$; $(-3)(-4) = \mathbf{12}$

C: $x^2 - 9x + 18 \Rightarrow (x - 6)(x - 3)$; $\frac{1}{6} + \frac{1}{3} = \frac{1}{2}$

D: $x^2 - 4x + 4 \Rightarrow (x - 3)(x - 1)$; $3 + 1 = \mathbf{4}$

7.

A: $\sqrt{(8 - 4)^2 + (6 - 5)^2} = \sqrt{16 + 1} = \sqrt{\mathbf{17}}$

B: $7x - 11(0) = 35$; $x = 5$. Thus the x-intercept is $(5, 0)$.

C: The smallest prime is 2. $2^5 = \mathbf{32}$.

D: There are **12** edges in a cube.

8.

A: $3^3 - 2(3) + 3(3) - 3^2 = \mathbf{39}$

B: $6^3 - 2(6) + 3(2) - 1^2 = \mathbf{209}$

C: $(-1)^3 - 2(-1) + 3(-5) - (-5)^2 = \mathbf{-39}$

D: $(-2)^3 - 2(-2) + 3(4) - 4^2 = \mathbf{-8}$

9. For each of the following, use the property $(a/b)^n = a^n/b^n$.

A. $4/25$

B. $1/8$

C. $-729/1000$

D. $1/625$

10.

$$2^{x+y} = 2^8$$

$$2^{2x-y} = 2^7$$

$$x + y = 8$$

$$+ \underline{2x - y = 7}$$

$$3x = 15$$

$$\Rightarrow x = 3; y = 5$$

Thus, A. 8 B. 7 C. 3 D. 5

11.

$$\frac{x^2 + 6x + 8}{x^2 + 5x + 6} \times \frac{x + 1}{x - 1} \div \frac{x^2 + 3x + 2}{x^2 + 8x + 15}$$

$$\Rightarrow \frac{(x + 4)(x + 2)}{(x + 3)(x + 2)} \times \frac{x + 1}{x - 1} \div \frac{(x + 2)(x + 1)}{(x + 5)(x + 3)}$$

$$\Rightarrow \frac{(x + 4)(x + 2)}{(x + 3)(x + 2)} \times \frac{x + 1}{x - 1} \times \frac{(x + 5)(x + 3)}{(x + 2)(x + 1)}$$

$$\Rightarrow \frac{(x + 4)(x + 5)}{(x - 1)(x + 2)} \Rightarrow \frac{x^2 + 9x + 20}{x^2 + x - 2}$$

Thus, A. 9 B. 20 C. 1 D. -2

12.

A. 0 The whole numbers are 0,1,2,...

B. 1 The natural numbers are 1,2,3...

C. 2 The prime numbers are 2,3,5,7,11...

D. 961. That is 31×31 . The next largest, 32×32 , is 1024.