

# Pre-Algebra Practice Exam 1: Solutions

## Prob. 1

Order the numbers from smallest to largest

a.  $-17, -5, 0, 12$

b.  $\frac{1}{20}, \frac{1}{21}$

c.  $-1\frac{1}{5} = -\frac{6}{5} = -\frac{42}{35}$  and  $-\frac{1}{7} = -\frac{5}{35}$ . Therefore the ordering is:  $-1\frac{1}{5}, -\frac{1}{7}$

## Prob. 2

a.  $n = -2 + 5$ , therefore  $n = 3$

b.  $n = 4 + 12$ , therefore  $n = 16$

c.  $n = 0 - 4$ , therefore  $n = -4$

d.  $x = 2 - \frac{1}{3} = \frac{6}{3} - \frac{1}{3}$ , therefore  $x = \frac{5}{3}$

e.  $x = 2 + 5 \times 2 = 2 + 10$ , therefore,  $x = 12$

f.  $x = (3 + 7) \times 3 = 10 \times 3$ , therefore,  $x = 30$

g.  $x = \frac{3}{4} + \frac{2}{5} = \frac{15}{20} + \frac{8}{20}$ , therefore  $x = \frac{23}{20} = 1\frac{3}{20}$

## Prob. 3

Combine by finding the LCD then adding the fractions:

a.  $\frac{1}{4} + \frac{2}{3} = \frac{3}{12} + \frac{8}{12} = \frac{11}{12}$

b.  $1\frac{1}{3} + 2 = \frac{4}{3} + \frac{6}{3} = \frac{10}{3} = 3\frac{1}{3}$

c.  $\frac{2}{9} - \frac{3}{12} = \frac{8}{36} - \frac{9}{36} = -\frac{1}{36}$

## Prob. 4

$\frac{5}{12}$  of the geese are black, therefore there are  $\frac{5}{12} \times 36 = 5 \times \frac{36}{12} = 5 \times 3 = 15$  black geese.

There are  $\frac{1}{3} \times 36 = 1 \times \frac{36}{3} = 1 \times 12 = 12$  grey geese.

The fraction of white geese are give by  $1 - \frac{5}{12} - \frac{1}{3} = 1 - (\frac{5}{12} + \frac{4}{12}) = 1 - \frac{9}{12} = \frac{3}{12} = \frac{1}{4}$ . Therefore, black is the dominant goose color.

**Prob. 5**

If cake A is cut into five pieces and Andrew eats 2, then he has eaten,  $2 \times \frac{1}{5} = \frac{2}{5}$  of the cake. Thus there is  $\frac{3}{5}$  of cake A left. If cake B is cut into 8 pieces and Beth eats 3, then she has eaten,  $3 \times \frac{1}{8} = \frac{3}{8}$  of cake B. Thus there is  $\frac{5}{8}$  of cake B left. In total there is  $\frac{3}{5} + \frac{5}{8} = \frac{24}{40} + \frac{25}{40} = \frac{49}{40} = 1\frac{9}{40}$  of cake left.

**Prob 6.**

a. The GCF of 12 and 50 is 2. The GCF of 15 and 75 is 15. The GCF of 33 and 105 is 3.

b. The LCM of 3 and 5 is 15. The LCM of 24 and 52 is 312. The LCM of 4 and 9 is 36.

**Prob. 7**

$$x + \frac{1}{4} = \frac{4}{16}, \text{ thus } x = \frac{1}{4} - \frac{1}{4} = 0.$$

Write in terms of the LCM.  $\frac{10}{45}x + \frac{15}{45} = \frac{6}{45}$ , therefore,  $\frac{10}{45}x = -\frac{9}{45}$ . Then multiply both sides by 45 and hence,  $x = \frac{9}{10}$

**Prob. 8**

We can write the cost of the pencil in terms of what it cost last week by 10% as:  $(x + 0.1x) = 0.05$ . Solving for x we see that  $(1 + 0.1)x = 0.05$ . Thus,  $1.1x = 0.05$ , which means that  $x = \frac{0.05}{1.1} \approx 0.4545$

**Prob. 9**

a.  $\frac{-20}{20} = -\frac{20}{20} = -1$

b.  $\frac{30}{0}$  is undefined.

c.  $\frac{0}{-3} = 0$