

# Exam 1 Key

1

$$1. a) \frac{4}{7} \cdot \frac{21}{24} = \frac{\cancel{4} \cdot 3 \cdot \cancel{7}}{\cancel{7} \cdot \cancel{4} \cdot 6} = \frac{3}{6} = \boxed{\frac{1}{2}}$$

$$b) \frac{36}{5} \div \frac{12}{45} = \frac{36}{5} \cdot \frac{45}{12} = \frac{\cancel{36} \cdot \cancel{45}}{\cancel{12} \cdot 5} = 3 \cdot 9 = \boxed{27}$$

$$c) \frac{4}{9} - \frac{5}{12} = \frac{4}{9} \cdot \frac{4}{4} - \frac{5}{12} \cdot \frac{3}{3} = \frac{16}{36} - \frac{15}{36} = \boxed{\frac{1}{36}}$$

$$9 = 3 \cdot 3$$

$$12 = 3 \cdot 4$$

$$\text{LCD: } 3^2 \cdot 4$$

← from work for c

$$d) \frac{4}{9} + \frac{5}{12} = \frac{16}{36} + \frac{15}{36} = \boxed{\frac{31}{36}}$$

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$$2. a) 12 + 64 \div 8 - 4$$

$$= 12 + 8 - 4 = 12 + 4 = \boxed{16}$$

$$b) 2^2 \cdot [4 - (15 - 20)] = 2^2 [4 - (-5)]$$

$$= 2^2 [4 + 5]$$

$$= 4 \cdot [9] = \boxed{36}$$

$$c) \frac{-27(-2) - |6 \cdot 4|}{-2(3) - 2(2)}$$

$$= \frac{27(2) - 24}{-6 - 4} = \frac{54 - 24}{-10} = \frac{30}{-10} = \boxed{-3}$$

3. a)  $55 \geq 3[4 + 3(4+1)]$

$55 \geq 3[4 + 3(5)]$

$55 \geq 3[4+15]$

$55 \geq 3[19]$

→  $55 \geq 57$   
**FALSE**

b)  $\frac{7(3+1) - 2}{3+5 \cdot 2} \leq 2$

$\frac{7(4)-2}{3+10} \leq 2$

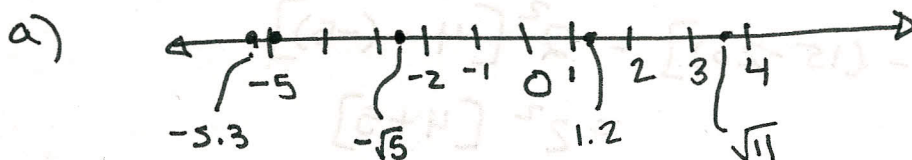
$\frac{28-2}{13} \leq 2$

→  $\frac{26}{13} \leq 2$

$2 \leq 2$

**TRUE**

4.  $\{-5.3, -5, -\sqrt{5}, 0, 1.2, \sqrt{11}\}$



b) Rational Numbers:  $\{-5.3, -5, 0, 1.2\}$

c) Irrational Numbers:  $\{-\sqrt{5}, \sqrt{11}\}$

5. a)  $5a + ab^2 - 2ab^2 + 3a = 8a - ab^2$

b)  $-5(x+y) + 2(x-y) = -5x - 5y + 2x - 2y = -3x - 7y$

c)  $7(2m+3) - 2(8m-4) = 14m + 21 - 16m + 8 = -2m + 29$

d)  $6p - 8p^2 + 4p + 6p^2 = 10p - 2p^2$

# Exam 1 Key

③

6. a) Commutative Property  
b) Distributive Property  
c) Identity Property  
d) Inverse Property  
e) Commutative Property  
f) Commutative Property  
g) Associative Property

Bonus Problem:

$$\begin{aligned} \frac{3}{4x} - \frac{5}{6} \div \frac{5x}{8} - \frac{1}{3x} &= \frac{3}{4x} \cdot \frac{3}{3} - \frac{\overset{5}{\cancel{10}}}{3x} \cdot \frac{4}{4} \\ &= \frac{3}{4x} - \frac{5}{6} \cdot \frac{8}{5x} - \frac{1}{3x} \\ &= \frac{3}{4x} - \frac{40}{30x} - \frac{1}{3x} \\ &= \frac{3}{4x} - \frac{4}{3x} - \frac{1}{3x} \end{aligned}$$
$$\begin{aligned} &= \frac{3}{4x} \cdot \frac{3}{3} - \frac{\overset{5}{\cancel{10}}}{3x} \cdot \frac{4}{4} \\ &= \frac{9}{12x} - \frac{20}{12x} \\ &= \boxed{\frac{29}{12x}} \end{aligned}$$

$$LCD = 4 \cdot 3 \cdot x$$

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