

Math 70
Exam 1 Solutions

1. (a) $\frac{5}{8} - \frac{3}{8} = \frac{2}{8} = \frac{1}{4}$ (Dividing out a common factor of 2.)

(b) Note that $3\frac{1}{2} = \frac{3(2)+1}{2} = \frac{7}{2}$.

So, $3\frac{1}{2} + \frac{2}{3} = \frac{7}{2} + \frac{2}{3} = \frac{21}{6} + \frac{4}{6}$ (Using a common denominator of 6)
 $= \frac{25}{6}$ or $4\frac{1}{6}$

(c) Since $9 - 5 = 4$, $5 + (-9) = -4$.

(d) $12 - (-9) = 12 + 9 = 21$

(e) Since $2.1 + 3.57 = 5.67$ (Line up decimal points to add.), $-2.1 + (-3.57) = -5.67$.

2. Note that $9\% = 0.09$. \Rightarrow Sales tax for the shoes = $0.09(40) = 3.60$

So, you will have to pay \$3.60 for the sales tax on the shoes.

3. (a) Two ways:

- Multiply the fractions and then simplify:

$$-\frac{12}{5}\left(\frac{3}{4}\right) = -\frac{36}{20} = -\frac{9}{5} \quad (\text{Dividing out a common factor of 4.})$$

- Simplify the fractions and then multiply:

$$-\frac{12}{5}\left(\frac{3}{4}\right) = -\frac{3}{5}\left(\frac{3}{1}\right) = -\frac{9}{5}$$

(b) $-30 \div 6 = -5$ since $30 \div 6 = 5$

(c) $(-3)^4 = (-3)(-3)(-3)(-3) = 81$

(d) $\frac{20}{21} \div 5 = \frac{20}{21} \div \frac{5}{1} = \frac{20}{21}\left(\frac{1}{5}\right) = \frac{4}{21}$

(e) $(-2.4)(-1.7) = 4.08$ since $2.4(1.7) = 4.08$

4. Note that $2,092 \text{ m} \times \frac{1 \text{ km}}{1000 \text{ m}} = \frac{2,092}{1000} \text{ km} = 2.092 \text{ km}$. (Dividing by 1000 moves the decimal to the left by 3 digits.)

So, the walking distance is 2.092 kilometers.

5. (a) $8 - 5(6 - 3)^2 = 8 - 5(3)^2$ Order of Operations: Work inside parentheses first.
 $= 8 - 5(9)$ Exponents second
 $= 8 - 45$ Multiplication next
 $= -37$ Subtraction last

(b) $a - 2ab + 7a + 2ab = a + 7a - 2ab + 2ab$
 $= 8a + 0ab$ since $1a + 7a = 8a$ and $-2ab + 2ab = 0ab$
 $= 8a$

(c) $7x(2 + 3x) - 5x^2 = 7x(2) + 7x(3x) - 5x^2$ Distributing first
 $= 14x + 21x^2 - 5x^2$
 $= 14x + 16x^2$ Combining like terms