

{ +2 pt each } 54 pts possible
Test #3

Name Key

Directions: Please show all your work since partial credit is given. Answers without the necessary work will receive no credit. And remember, have fun!

1. Solve the following equations.

a) $0.6x + 3.2 = -3.7$

$x = -11.5$

or $-\frac{23}{2}$

$$0.6x + 3.2 = -3.7$$

$$0.6x + 3.2 - 3.2 = -3.7 - 3.2$$

$$0.6x = -6.9$$

$$x = \frac{-6.9}{0.6} = -11.5$$

d) $\frac{n}{12} = \frac{15}{72}$

$n = 2.5$ or $\frac{5}{2}$

$$72n = 12 \cdot 15$$

$$72n = 180$$

$$n = \frac{180}{72}$$

$$n = 2.5$$

b) $5y - 0.12 = -5$

$y = -0.976$

$$5y - 0.12 + 0.12 = -5 + 0.12$$

$$5y = -4.88$$

$$y = \frac{-4.88}{5} = -0.976$$

e) $\frac{1}{20} = \frac{-x}{105}$

$x = -1.05$

$$\frac{1}{5} \cdot (105) = -20x$$

$$21 = -20x$$

$$\frac{-21}{20} = x$$

or
 -1.05

$$c) \frac{2}{3} = \frac{-20}{z} \quad \boxed{z = -30}$$

$$2z = 3 \cdot (-20)$$

$$2z = -60$$

$$z = \frac{-60}{2} = -30$$

$$f) \frac{b}{1.6} = \frac{6}{2.4} \quad \boxed{b = 4}$$

$$2.4b = 6 \cdot (1.6)$$

$$2.4b = 9.6$$

$$b = \frac{9.6}{2.4}$$

$$b = 4$$

2. Kate spent \$17,778.60 in tuition and fees for her masters degree in Biomedical Engineering. If it took her 2 years to earn her degree, and there are 3 quarters per year, what was Kate's cost per quarter?

$$\underline{\$2963.10/\text{quarter}}$$

$$(\# \text{ of quarters}) = \frac{3 \text{ quarters}}{1 \text{ year}}, 2 \text{ years} = 6 \text{ quarters}$$

$$\text{So, } \frac{\text{Cost}(\$)}{\text{quarter}} = \frac{\$17,778.60}{6 \text{ quarters}} = \$2,963.10 / \text{quarter}$$

3. Simplify the following expressions. Please give exact answers.

$$a) \sqrt{\frac{16}{49}} \quad \boxed{\frac{4}{7}}$$

$$\frac{\sqrt{16}}{\sqrt{49}} = \frac{4}{7}$$

$$b) -3\sqrt{25} + 9\sqrt{169} \quad \boxed{102}$$

$$-3 \cdot 5 + 9 \cdot 13$$

$$-15 + 117$$

$$+102$$

4. Write each of the following ratios as a fraction in lowest terms.

a) 14 to 63

$$\boxed{\frac{2}{9}}$$

$$\frac{14 \div 7}{63 \div 7} = \frac{2}{9}$$

b) $1\frac{1}{3}$ to $3\frac{1}{3}$

$$\boxed{\frac{2}{5}}$$

$$\frac{\frac{4}{3}}{\frac{10}{3}} = \frac{4}{10} = \frac{2}{5}$$

c) $\frac{2}{5}$ to $\frac{5}{9}$

$$\boxed{\frac{18}{25}}$$

$$\frac{\frac{2}{5}}{\frac{5}{9}} = \frac{2}{5} \cdot \frac{9}{5} = \frac{18}{25}$$

d) 0.5 to 1.5

$$\boxed{\frac{1}{3}}$$

$$\frac{0.5 \times 10}{1.5 \times 10} = \frac{5 \div 5}{15 \div 5} = \frac{1}{3}$$

e) $-\frac{3}{4}$ to $\frac{1}{4}$

$$\boxed{\frac{-3}{1}}$$

$$\frac{-\frac{3}{4}}{\frac{1}{4}} = \frac{-3}{4} \cdot \frac{4}{1} = \frac{-3}{1}$$

f) 0.04 to 0.24

$$\boxed{\frac{1}{6}}$$

$$\frac{0.04 \times 100}{0.24 \times 100} = \frac{4 \div 4}{24 \div 4} = \frac{1}{6}$$

5. The gas tank on a car holds 60 liters of gas. At the beginning of a 6 hour trip, the tank is full. At the end of the trip, it contains only 12 liters. What is the rate at which the car uses gas in liters per hour?

$$\boxed{8 \text{ liters/hr}}$$

$$\begin{aligned} (\text{Used gas}) &= 60 \text{ liters} - 12 \text{ liters} \\ &= 48 \text{ liters} \end{aligned}$$

$$\text{rate} = \frac{48 \text{ liters}}{6 \text{ hrs}} = \frac{8 \text{ liters}}{1 \text{ hr}}$$

6. If 125 grams of peas contain 26 grams of carbohydrates, how many grams of carbohydrates do 400 grams of peas contain?

$$\boxed{83.2 \text{ grams}}$$

$$\frac{125 \text{ g peas}}{26 \text{ g carb}} = \frac{400 \text{ g peas}}{X}$$

7. The following problems are in regards to changing percents to fractions or decimals.

- a) Change 4.5 to a percent. _____

$$\boxed{450\%}$$

- c) Change $32\frac{1}{2}\%$ to a fraction in lowest terms. _____

$$\boxed{\frac{13}{40}}$$

$$32\frac{1}{2}\% \rightarrow 32.5\% \rightarrow 0.325$$

$$\text{So } 0.325 = \frac{325 \div 25}{1000 \div 25} = \frac{13}{40}$$

b) Change $\frac{7}{12}$ to a percent.

$$58\frac{1}{3}\%$$

$$\frac{7}{12} \times 100\% = \frac{700\%}{12} = 58\frac{4}{12}\%$$

or

d) Change 4.86% to a decimal.

$$0.0486$$

8. Solve the following percentage problems.

a) What is 12% of 40?

$$4.8$$

$$x = (0.12)(40) \\ = 4.8$$

c) 60 is 30% of what number?

$$200$$

$$60 = 0.3x$$

$$\frac{60}{0.3} = \frac{0.3x}{0.3}$$

$$\frac{60}{0.3} = x$$

$$200 = x$$

b) What percent of 128 is 48?

$$37.5\%$$

$$48 = x \cdot 128$$

$$\frac{48}{128} = \frac{x \cdot 128}{128}$$

$$0.375 = \frac{48}{128} = x$$

$$\rightarrow 37.5\%$$

d) 15% of 120 is what number?

$$18$$

$$x = (0.15)(120)$$

$$x = 18$$

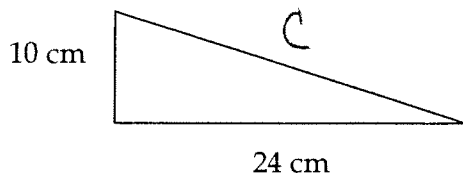
9. If 48% of the students at a certain college are male and there are 1,440 male students, what is the total number of students at the college?

3,000 students

$$1440 = 0.48 \cdot X$$

10. Find the length of the hypotenuse of the right triangle shown below.

26 cm



$$c^2 = 10^2 + 24^2$$

$$c^2 = 100 + 576$$

$$c^2 = 676$$

$$c = 26$$