

Foundations of Algebra
Unit 3 Review

Name: KEY

1. List 3 equivalent fractions for each:

a. $\frac{1}{3} = \frac{2}{6} = \frac{9}{12} = \frac{15}{15}$

b. $\frac{8}{2} = \frac{4}{4} = \frac{16}{16} = \frac{24}{24} = \frac{32}{32} = \frac{40}{40}$

c. $\frac{7}{10} = \frac{14}{20} = \frac{21}{30} = \frac{28}{40} = \frac{35}{50}$

2. Write the ratio $\frac{1}{5}$ two other ways:

$\frac{1}{5} \quad | \quad 1:5 \quad | \quad 1 \text{ to } 5$

3. Write the unit rate for each:

a. 357 miles in 5 hours $\div 5$

b. 8 ducks for \$23.60 $\div 8$

c. a 10-lb bag of cherries for \$33.49 $\div 10$

d. 12 chickens lay 30 eggs $\div 12$

$\underline{71.4}$ miles per hour

$\underline{\$2.95}$ per duck

$\underline{\$3.35}$ per lb

$\underline{2.5}$ eggs per chicken

4. Tell if each set of ratios form a proportion: (use cross-products)

a. ~~$\frac{2}{5} = \frac{10}{25}$~~ $5 \times 10 = 50$
 $2 \times 25 = 50$
yes

b. ~~$\frac{4}{11} = \frac{123}{43}$~~ $4 \times 11 = 44$
 $3 \times 123 = 369$
no

c. ~~$\frac{5}{3} = \frac{12}{15}$~~ $5 \times 12 = 60$
 $3 \times 15 = 45$
no

d. ~~$\frac{21}{69} = \frac{7}{3}$~~ $49 \times 3 = 147$
 $21 \times 7 = 147$
yes

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5. Determine if the following tables display proportional relationships: (find unit rates)

a.

| Number of portraits | Time (In Hours) |
|---------------------|-----------------|
| 1 | 5 |
| 2 | 10 |
| 3 | 15 |
| 4 | 20 |

$\frac{1}{5}$ $\frac{2 \div 2}{10 \div 2} = \frac{1}{5}$ $\frac{3 \div 3}{15 \div 3} = \frac{1}{5}$ $\frac{4 \div 4}{20 \div 4} = \frac{1}{5}$

yes

b.

| Cups sold (km) | Earnings (\$) |
|----------------|---------------|
| 3 | 12 |
| 5 | 20 |
| 7 | 28 |
| 9 | 36 |

$\frac{12 \div 3}{4} = \frac{1}{4}$ $\frac{20 \div 5}{4} = \frac{1}{4}$ $\frac{28 \div 7}{4} = \frac{1}{4}$ $\frac{36 \div 9}{4} = \frac{1}{4}$

Solve each proportion. Round to the nearest tenth if necessary.

6) $\frac{4}{9}x = 90$

$x = 20.25$

7) $\frac{4}{7} = \frac{9}{x}$

$9v = 4$

$v = 0.4$

8) $\frac{8a}{3} = 30$

$a = 3.75$

9) $\frac{8}{7} = \frac{x}{10}$

$8x = 70$

$x = 8.75$

10) $\frac{7}{3}m = 12$

$m = 1.71$

11) $\frac{3}{7} = \frac{6}{8}$

$7b = 24$

$b = 3.4$

$$\frac{15}{100} = \frac{\text{of}}{\%}$$

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Solve each problem. Round to the nearest tenth if necessary.

12) 87 is 53% of what?

~~$$\frac{87}{X} = \frac{53}{100}$$~~

$$53X = 8700$$

$$X = 164.2$$

13) What percent of 139 is 65?

~~$$\frac{65}{139} = \frac{X}{100}$$~~

$$139X = 6500$$

$$X = 46.8$$

14) 88% of 158.5 is what?

~~$$\frac{X}{158.5} = \frac{88}{100}$$~~

$$100X = 1394.8$$

$$X = 139.48$$

15) 25 is what percent of 95?

~~$$\frac{25}{95} = \frac{X}{100}$$~~

$$95X = 2500$$

$$X = 26.3$$

16) What percent of 147 is 67?

~~$$\frac{67}{147} = \frac{X}{100}$$~~

$$147X = 6700$$

$$X = 45.6$$

17) 96% of what is 151.6?

~~$$\frac{151.6}{96} = \frac{X}{100}$$~~

$$96X = 15160$$

$$X = 157.9$$

18. A baseball pitcher won 80% of the games he pitched. If he pitched 35 ballgames, how many games did he win?

$$\frac{\text{part}}{\%} = \frac{\text{whole}}{100}$$

~~$$\frac{X}{35} = \frac{80}{100}$$~~

$$100X = 2800$$

$$X = 28$$

19. Jerry, an electrician, worked 7 months out of the year. What percent of the year did he work?

~~$$\frac{7}{12} = \frac{X}{100}$$~~

$$12X = 700$$

$$X = 58.3\%$$

