Algebra 0507
Review for Test
Ch. 3 – WS #18-24

Name Key

Solve each proportion.

1. $\frac{14}{91}=\frac{63}{x}$

$\frac{14x}{14}=\frac{5733}{14}$

$x = 409.5$

2. $\frac{2.5}{5}=\frac{0.5}{x}$

$\frac{2.5x}{2.5}=\frac{2.5}{2.5}$

$x = 1$

3. $\frac{5}{n}=\frac{4}{(n-1)}$

$5(n-1) = 4n$

$5n - 5 = 4n$

$-5n \quad -5n$

$\frac{-5}{-1}=\frac{-n}{-1}$

$5 = n$

4. $\frac{10}{(y+3)}=\frac{4}{(y-1)}$

$10(y-1) = 4(y+3)$

$10y - 10 = 4y + 12$

$-4y \quad -4y$

$6y - 10 = 12$

$+10 \quad +10$

$\frac{6y}{6}=\frac{22}{6}$ $\quad y = 3\frac{2}{3}$

5. $\frac{(2-x)}{6}=\frac{4}{3}$

$3(2-x) = 24$

$6 - 3x = 24$

$-6 \quad -6$

$\frac{-3x}{-3}=\frac{18}{-3}$

$x = -6.$

6. $\frac{x}{5}=\frac{(2x-4)}{9}$

$9x = 5(2x-4)$

$9x = 10x - 20$

$-10x \quad -10x$

$\frac{-x}{-1}=\frac{-20}{-1}$

$x = 20$

Set up an equation and solve.

7. A machine can fill 96 jars of peanut butter in 2 minutes. At this rate, how many jars can it fill in 60 minutes?

$\frac{96 \text{ jars}}{2 \text{ minutes}} = \frac{x \text{ jars}}{60 \text{ minutes}}$

$\frac{5760}{2} = \frac{2x}{2}$ $x = 2880$

The machine can fill 2880 jars in 60 minutes.

8. A sample of 500 toy trucks contains 35 that are defective. Find the number of defective toy trucks in a shipment of 25,000.

$\frac{500 \text{ trucks}}{35 \text{ def.}} = \frac{25\,000 \text{ trucks}}{x \text{ def}}$

$\frac{500x}{500} = \frac{875000}{500}$

$x = 1750$

There will be 1750 defective trucks.

9. A truck travelled 450 kilometers on 60 liters of fuel. How far can it travel on 100 liters of fuel?

$\frac{450 \text{ km}}{60 \text{ liters}} = \frac{x \text{ km}}{100 \text{ liters}}$

$\frac{4500}{60} = \frac{60x}{60}$

$750 = x$

The truck can travel 750 km on 60 liters.

10. John makes 15 out of every 25 free throws he attempts. How many will he make if he attempts 125 free throws?

$\frac{15 \text{ f.t.}}{25 \text{ attempts}} = \frac{x \text{ f.t.}}{125 \text{ att.}}$

$\frac{1875}{25} = \frac{25x}{25}$

$75 = x$

John will make 75 free throws.

Direct Variation – Assume y varies directly as x. $\frac{y}{x} = \frac{y}{x}$

11. If $y = -2$ when $x = 8$, find x when $y = 10$.

$\frac{-2}{8} = \frac{10}{x}$

$\frac{-2x}{-2} = \frac{80}{-2}$

$x = -40$

12. If $y = 3$ when $x = 15$, find x when $y = -20$.

$\frac{3}{15} = \frac{-20}{x}$

$\frac{3x}{3} = \frac{-300}{3}$

$x = -100$

13. A toll on a bridge varies directly with the number of axles on a vehicle. On a certain bridge, the toll for a 4-axle truck is $3.00. What will be the toll for a 6-axle truck.

$\frac{4 \text{ axle}}{\$3} = \frac{6 \text{ axle}}{x}$

$\frac{4x}{4} = \frac{18}{4}$

$x = 4.5$

The toll for a 6-axle truck is $4.50.

14. The amount of pay Tom earns varies directly with the number of hours worked. Last week, he earned $187.50 for 20 hours of work. How much will he earn if he works 120 hours?

$\frac{\$187.50}{20 \text{ hours}} = \frac{x}{120 \text{ hours}}$

$\frac{22500}{20} = \frac{20x}{20}$

$\$1125 = x$

Tom will earn $1125 if he works 120 hours.

$xy = xy$ or $yx = yx$

Inverse Variation– Assume y varies inversely as x.

15. If $y = -2$ when $x = 8$, find x when $y = 10$.

$-2(8) = 10(x)$

$\frac{-16}{10} = \frac{10x}{10}$

$-1.6 = x$

16. If $y = 5$ when $x = 25$, find y when $x = 3$.

$5(25) = y(3)$

$\frac{125}{3} = \frac{3y}{3}$

$41\frac{2}{3} = y$

17. The amount of time to make a trip varies inversely as the rate of travel. At 30 miles per hour, it takes Jenny 4 hours to travel from her home to her cottage. How long would it take if she drove 50 miles per hour?

$30 \cdot 4 = 50 \cdot x$

$120 = 50x$

$2.4 = x$

It would take Jenny 2.4 hours to get to the cottage.

18. The number of tomato plants in a row varies inversely as the space between them. If the plants are spaced 15 cm apart, 60 plants fit in a row. How many can you fit is they are placed 25 cm apart?

$15 \cdot 60 = 25 \cdot x$

$\frac{900}{25} = \frac{25x}{25}$

$36 = x$

You can fit 36 plants.

Set up a proportion and solve. $\frac{\%}{100} = \frac{is}{of}$

19. What number is 15% of 75?

$\frac{15}{100} = \frac{x}{75}$

$\frac{1125}{100} = \frac{100x}{100}$

$11.25 = x$

11.25 is 15% of 75.

20. What percent of 25 is 5?

$\frac{x}{100} = \frac{5}{25}$

$\frac{25x}{25} = \frac{500}{25}$

$x = 20$

20% of 25 is 5.

21. 28 is 75% of what number?

$\frac{75}{100} = \frac{28}{x}$

$\frac{75x}{75} = \frac{2800}{75}$

$x = 37\frac{1}{3}$

28 is 75% of $37\frac{1}{3}$.

22. 3% of 50 is what number?

$\frac{3}{100} = \frac{x}{50}$

$\frac{150}{100} = \frac{100x}{100}$

$1.5 = x$

3% of 50 is 1.5