

Mixed Practice Direct & Inverse Variation

1) A person who weighs 185 lb should be given how many milligrams of medication if the dosage is 15 mg for every 10 lb?

15 mg for every 10 lbs
 x mg for every 185 lbs
 300 mg for 200 lb, so under 300 mg

$$\frac{15}{x} = \frac{10}{85}$$

$$10x = 127.5$$

$$x = 127.5$$

185 lb need 127.5 mg

2) A person who weighs 142 lb should be given how many mg of medication if the dosage is 25 mg for every 10 lb?

25 mg for 10 lb
 x mg for 142 lb

$$\frac{25}{x} = \frac{10}{142}$$

$$10x = 3550$$

500 mg for 200 lb
 so under 500 mg

$$x = 355$$

355 mg for 142 lb

3) Nurse Lee prepares dosages for her patients in 30 min. If she gets help from assistants, who also work at her rate, and altogether they can complete the preparation in 6 min, how many **helpers** did she get?

1 nurse take 30 min
 x nurses take 6 min

$$\frac{1}{x} = \frac{6}{30}$$

Estimation

5 nurses should take 6 min
 so 4 helpers

$$6x = 30$$

$$x = 5$$

4 helpers are needed for 6 min

4) A 4.5 in. pulley turning at 1000 rpm is belted to a larger pulley turning at 500 rpm. What is the size of the larger pulley?

4.5 in pulley turns at 1000 rpm
 x in pulley turns at 500 rpm

$$\frac{4.5}{x} = \frac{500}{1000}$$

Estimation

9 in pulley should turn at 500 rpm

$$500x = 4500$$

$$x = 9$$

9 in pulley turns at 500 rpm

5) The pediatric dosage for chlorpromazine hydrochloride is 0.25 mg/lb. What is the dosage for a child who weighs 40 lb?

0.25 mg for every 1 lb
 x mg for 40 lb

$$\frac{0.25}{x} = \frac{1}{40}$$

$$x = 10$$

1 mg for 4 lbs
 10 mg for 40 lbs

10 mg for 40 lb

6) It takes five people 7 days to clear an acre of land of debris left by a tornado; inversely, more people can do the job in less time. How long will it take 7 people all working at the same rate?

5 people take 7 days
7 people take x days

$$\frac{5}{7} = \frac{x}{7}$$

$$7x = 35$$

$$x = 5$$

Est 10 people take 3.5 day
7 people should be between 3.5 and 7 days

7 people take 5 days

7) A car with a speed control device travels 100 mi at 50 mi/h. The trip takes 2 h. If the car traveled at 40 mi/h, how much time would the driver need to reach the same destination?

50 mi/h take 2 hr
40 mi/h take x hr

$$\frac{50}{40} = \frac{x}{2}$$

40 miles/hr should be over 2 hrs

$$40x = 100$$

$$x = 2.5 \text{ hr}$$

40 mi/h takes 2.5 hr

8) A blueprint has a scale of $\frac{1}{2} \text{ in} = 1 \text{ ft}$. On a blueprint a wall is $7\frac{1}{2}$ in. long. What was the actual measure of the wall?

$\frac{1}{2}$ in blueprint represent 1 ft
 $7\frac{1}{2}$ in blueprint represent x ft

1 in = 2 ft
7 in = 14 ft
 $7\frac{1}{2}$ in = 15 ft

$$\frac{\frac{1}{2}}{7\frac{1}{2}} = \frac{1}{x}$$

$$\frac{1}{2}x = 7\frac{1}{2}$$

$$x = 15$$

15 ft is the measure of the wall

9) A blueprint has a scale of $\frac{3}{4} \text{ in} = 1 \text{ ft}$. On a blueprint a wall is drawn $8\frac{3}{4}$ in. long. What is the actual measure of the wall.

$\frac{3}{4}$ in represent 1 ft
 $8\frac{3}{4}$ in represent x ft

$$\frac{\frac{3}{4}}{8\frac{3}{4}} = \frac{1}{x}$$

$$\frac{3}{4}x = 8\frac{3}{4}$$

1.5 in = 2 ft
3 in = 4 ft
9 in = 12 ft under 12 ft

$11\frac{2}{3}$ ft is the measure of the wall

10) A 10 in pulley makes 900 revolutions every minute. It drives a larger pulley at 500 rpm. What is the diameter of the in this inverse relationship?

10 in pulley turns at 900 rpm
x in pulley turns at 500 rpm

$$\frac{10}{x} = \frac{500}{900}$$

$$500x = 9000$$

$$x = 18 \text{ in}$$

20 in pulley will turn at 450 smaller than 20 in

18 in pulley turns at 500 rpm