

CV | Algebra I

Chapter 2 REVIEW

NAME Key

1. Translate the following sentence into an equation.

A number n added to 18 is seven times the difference of n and three.

$$(n+18) = 7(n-3)$$

2. Translate the following equation into a verbal sentence

$$\frac{3}{y} - 5 = x(y+7)$$

Five less than 3 divided by some number is equal to that number increased by 7, then multiplied by x . (you may have different answers)

Solve each equation. Show your Work.

3. $7+t=11$

$$\begin{array}{r} -7 \\ -7 \end{array}$$

$$\boxed{t=4}$$

4. $-5=v-12$

$$\begin{array}{r} +12 \\ +12 \end{array}$$

$$\boxed{7=v}$$

5. $\frac{-8x}{-8} = \frac{-56}{-8}$

$$\boxed{x=7}$$

6. $\frac{7}{9}y = -6$

$$\begin{array}{r} \cdot \frac{9}{7} \\ \cdot \frac{9}{7} \end{array}$$

$$\boxed{y = -\frac{54}{7}}$$

$$7. \frac{10}{27} = \frac{a}{135}$$

$$\frac{27a}{27} = \frac{1350}{27}$$

$$a = 50$$

$$8. 3 - 5b = -32$$

$$\begin{array}{r} -3 \quad -3 \\ -5b = -35 \\ \hline -5 \quad -5 \end{array}$$

$$b = 7$$

For Questions 9 and 10, write an equation for each problem. Then solve the equation.

9. What number decreased by 8.1 equals 4.9?

$$x - 8.1 = 4.9$$

$$\begin{array}{r} +8.1 \quad +8.1 \\ \hline \end{array}$$

$$x = 13$$

10. Fifteen is added to the product of a number and 6. The result is 9. Find the number.

$$6x + 15 = 9$$

$$\begin{array}{r} -15 \quad -15 \\ \hline \end{array}$$

$$\frac{6x}{6} = \frac{-6}{6}$$

$$x = -1$$

11. During an evening out, Dean paid a cab driver \$20. He then spent \$25 on dinner and half of his remaining money on a painting. He bought an umbrella for \$23.75 and had \$42.15 left. How much money did Dean have at the beginning of the weekend?

$$\frac{1}{2}(x - 20 - 25) - 23.75 = 42.15$$

$$\begin{array}{r} +23.75 \quad +23.75 \\ \hline \end{array}$$

$$\frac{1}{2}(x - 45) = 65.9$$

$$\begin{array}{r} \cdot 2 \quad \cdot 2 \\ x - 45 = 131.8 \\ \hline +45 \quad +45 \end{array}$$

$$x = 176.8$$

12. Evaluate $|3t - n|$ if $t = -3$ and $n = 2$.

$$|3(-3) - 2|$$

$$|-9 - 2|$$

$$|-11|$$

$$11$$

For Questions 13 and 14, solve each equation.

13. $|2t+4|=2$

$$2t+4=2 \text{ or } 2t+4=-2$$

$$2t=-2 \quad 2t=-6$$

$$\boxed{t=-1} \text{ or } \boxed{t=-3}$$

14. $|r+3|=1$

$$r+3=1 \text{ or } r+3=-1$$

$$\boxed{r=-2} \text{ or } \boxed{r=-4}$$

15. Use cross products to determine whether the pair of ratios $\frac{14}{17}$ and $\frac{39}{51}$ form a proportion.

Write yes or no.

$$\frac{14}{17} = \frac{39}{51} \quad \begin{array}{l} \swarrow \text{Need to} \\ \swarrow \text{show this} \end{array}$$

$$14 \cdot 51 \stackrel{?}{=} 17 \cdot 39$$

$$714 \neq 663 \quad \boxed{\text{NO}}$$

16. Solve the proportion $\frac{9}{12} = \frac{15}{a}$.

$$9a = 12 \cdot 15$$

$$a = \frac{12 \cdot 15}{9} = \boxed{20}$$

For Questions 17 – 19, solve each equation.

17. $9-t=t+3$

$$+t \quad +t$$

$$9 = 2t + 3$$

$$-3 \quad -3$$

$$\frac{6}{2} = \frac{2t}{2}$$

$$\boxed{3=t}$$

18. $2(y-6) = 3y + 12 - y$

$$\begin{array}{r} 2y - 12 = 2y + 12 \\ -2y \quad -2y \\ \hline -12 = 12 \end{array}$$

No Solution

19. $17 + 3(z-2) - 11z = -7(z+2) + 14$

$$17 + 3z - 6 - 11z = -7z - 14 + 14$$

$$11 - 8z = -7z$$

$$\begin{array}{r} +8z \quad +8z \\ \hline \end{array}$$

$$\boxed{11 = z}$$

20. Solve $\frac{r}{n} + t = 4v$ for r .

$$\frac{r}{n} = 4v - t$$

$$\boxed{r = n(4v - t)}$$

21. State whether the percent of change is a percent of increase or a percent of decrease. Then find the percent of change. Original: 60, New: 75.

Increase by 25%

$$\frac{15}{60} = \frac{?}{100}$$

22. Find the discounted price. Flashlight: \$18.00, discount: 25%

$$\boxed{\$13.50}$$

23. Nature's Best wants to combine nuts they sell for \$3.60 a pound with dried fruit they sell for \$2.40 a pound to create a trail mix. How much of each snack should they use to make 10 pounds of trail mix that would sell for \$3.30 a pound?

	Amount	Cost	totals
Nuts	X	3.60	3.60x
fruit	10-x	2.40	2.40(10-x)
Mix	10	3.30	3.30(10)

$$3.60x + 2.40(10-x) = 33$$

$$3.60x + 24 - 2.4x = 33$$

$$1.2x + 24 = 33$$

$$1.2x = 9$$

$$x = 7.5$$

7.5 lbs of Nuts
2.5 lbs of fruit

24. Paula leaves home driving 40 miles per hour. One hour later, her brother Dan leaves home, driving in the same direction at a speed of 50 miles per hour. How long will it take Dan to catch up to Paula?

	Speed	Time
Paula	40mph	X+1
Dan	50mph	X

Use $d = r \cdot t$ distance = Rate \cdot time

Since they will travel the same distance

$$40(x+1) = 50x$$

$$40x + 40 = 50x$$

$$40 = 10x$$

$$4 = x$$

4 hours

25. A container company wants to make a cylindrical cardboard container with a volume of 4752 cubic inches. The formula $V = \pi r^2 h$ represents the volume of a cylinder. In this formula, V represents the volume, r represents the radius of the cylinder's base, and h represents the height of the cylinder. Solve for h. What height should the company make the container if the radius of the base must be 9 inches?

$$V = \pi r^2 h$$

$$\frac{V}{\pi r^2} = h$$

$$\frac{4752}{\pi (9)^2} = h$$

$$h \approx 18.67 \text{ inches}$$