

Name: \_\_\_\_\_

Core: \_\_\_\_\_

Date: \_\_\_\_\_

Try translating the following into expressions

Ones to watch:

➤ When the terms "less than" or "fewer" "subtracted from" are used the number or variable will come after the operation

Examples: "10 less than x"

$$x - 10$$

"5 subtracted from y"

$$y - 5$$

"11 fewer than z"

$$z - 11$$

Try:

1. The quotient of a number and 3

$$n \div 3 \text{ or } \frac{n}{3}$$

2. 17 subtracted from a number

$$n - 17$$

3. 5 more than twice a number

$$5 + 2n$$

4. 8 less than quadruple a number

$$4n - 8$$

5. 6 fewer than 4 times a number h

$$4h - 6$$

6. 12 more than triple a number

$$12 + 3n$$

7. a number divided by 14

$$\frac{n}{14} \text{ or } n \div 14$$

8. 7 subtracted from a number

$$x - 7$$

9. 9 less than a number

$$x - 9$$

10. y less than 19

$$19 - y$$

11. The difference between 11 and x

$$11 - x$$

12. 8 more than four times x

$$8 + 4x$$

13. 14 less than the quotient of x and 4

$$\frac{x}{4} - 14$$

14. 3x less than 26

$$26 - 3x$$

15. 36 fewer than 3 times a number

$$3x - 36$$

## Writing & Solving Equations Notes

STEP 1:	STEP 2:	STEP 3:	STEP 4:
Highlight/Underline Important information.	Define a variable for the missing information	Write an equation using your variables and SOLVE!	Does your solution make sense?  CHECK YOU WORK!

For each word problem, clearly define your variable, write an equation and solve.

1. You and three friends go to dinner at Red Robin. When the waitress brought the bill, you all decided to split the bill evenly. If each person paid \$14, what was the total bill?

$$\begin{array}{r} 14 \\ \times 4 \\ \hline 56 \end{array}$$

$$4(14) = x$$

$$\quad \quad \quad \downarrow$$

$$56 = x$$

Variable: total bill

Equation:  $4(14) = x$

Solution: \$56

2. After you withdraw \$60 from your savings account, the balance is \$388. How much money did you have before the withdrawal?

$$\begin{array}{r} x - 60 = 388 \\ + 60 \quad + 60 \\ \hline x = 448 \end{array}$$

Variable: \$ before withdrawal

Equation:  $x - 60 = 388$

Solution: \$448

3. The population of South Africa is three times the population of Greece. If the population of South Africa is 39 million, find the population of Greece.

$$\div \frac{3x}{3} = \frac{39}{3} \div$$

$$x = 13$$

Variable: population of Greece

Equation:  $3x = 39$

Solution: 13 million

4. I bought an iPod touch and new headphones and paid a total of \$264. The headphones cost \$56, how much did I pay for the iPod touch?

$$\begin{array}{r} x + 56 = 264 \\ - 56 \quad - 56 \\ \hline x = 208 \end{array}$$

Variable: iPod touch cost

Equation:  $x + 56 = 264$

Solution: \$208

A class of 35 students separated into equal sized teams that had 5 students per team. How many teams did the class split into?

$$\begin{aligned} 5x &= 35 \\ \frac{5x}{5} &= \frac{35}{5} \\ x &= 7 \end{aligned}$$

Variable: # of teams

Equation:  $5x = 35$

Solution: 7

6. The Wyatt family went on a road trip out west. They drove at an average rate of 62 miles per hour. How long did it take them to drive 558 miles?

$$\begin{aligned} 62x &= 558 \\ \frac{62x}{62} &= \frac{558}{62} \\ x &= 9 \end{aligned}$$

$$\begin{array}{r} 62 \overline{)558} \\ \underline{62} \phantom{0} \\ 9 \phantom{0} \\ \underline{558} \\ 0 \end{array}$$

Variable: time of driving

Equation:  $62x = 558$

Solution:  $x = 9$  hours

7. Casey is 14 years old. Her sister Sarah is 3 years younger than her. How old is Sarah?

$$\begin{aligned} x + 3 &= 14 \\ \underline{-3} \quad \underline{-3} & \\ x &= 11 \end{aligned}$$

Variable: Sarah's age

Equation:  $x + 3 = 14$

Solution: 11 years old

8. Ahmad, Malik, and Jose have collected \$83.52 to help out a neighbor. If Ahmad has \$18.15 and Jose has \$33.92, write and solve an equation to determine how much Malik has collected.

$$\begin{aligned} 18.15 + 33.92 + x &= 83.52 \\ 52.07 + x &= 83.52 \end{aligned}$$

$$\begin{array}{r} 18.15 \\ 33.92 \\ \hline 52.07 \end{array}$$

Variable: \$ Malik collected

Equation:  $52.07 + x = 83.52$

$$\begin{array}{r} 83.52 \\ - 52.07 \\ \hline 31.45 \end{array}$$

Solution: \$ 31.45

9. A rectangle's width is one-fourth of its length. If the width is 9 inches, what is the length of the rectangle?

$$\square \quad \frac{4}{1} \cdot \frac{1}{4}x = 9 \cdot \frac{4}{1} = 36$$

Variable: length

Equation:  $\frac{1}{4}x = 9$

Solution: 36 inches

10.) Karter had \$14 in his bank account before putting in his birthday earnings. He now has \$98. How much money did he earn at his birthday?

$$\begin{array}{r} x + 14 = 98 \\ -14 \quad -14 \\ \hline \end{array}$$

$$x = 84$$

11.) Larsen spent \$78 on three pairs of sandals for the summer. If each pair of sandals cost the same amount, write an equation that represents this situation and solve to find the cost of one pair of sandals

$$\begin{array}{r} 26 \\ 3 \overline{) 78} \\ \underline{-60} \\ 18 \\ \underline{-18} \\ 0 \end{array} \div \frac{3x = 78}{3} \div$$

12.) Pamela earns \$18 for vacuuming and dusting her house. She spends \$4 on lunch and \$9 on a new dress. Write and solve an equation to show how much money Pamela has left.

$$4 + 9 = 13$$

$$\begin{array}{r} x + 13 = 18 \\ -13 \quad -13 \\ \hline \end{array}$$

$$x = 5$$

13.) Thomas had a bag of gum drops that he divided equally among his four friends. If each friend receives 56 gum drops, how many gum drops did he start with?

$$56 \cdot 4 = x \quad \text{or} \quad \frac{x}{4} = 56 \cdot 4 = x \cdot \frac{56}{4} = 224$$

14. Laurie's job as an amusement park mascot pays her \$15 per day with an additional \$9 per hour. How much will her total paycheck be if she works 5 hours per day, for 3 days?

$$9 \cdot 5 + 15 \cdot 3 = x \quad \begin{array}{r} 15 + 9(5) \\ 15 + 45 \\ \hline 60 \end{array}$$

$$60 \cdot 3 = x$$

Variable: \$ from birth day

Equation:  $x + 14 = 98$

Solution: \$84

Variable: Cost of 1 sandal pair

Equation:  $3x = 78$

Solution: \$26

Variable: \$ left

Equation:  $x + 13 = 18$

Solution: \$5

Variable: # of gum drops @ start

Equation:  ~~$x$~~   $\frac{x}{4} = 56$

Solution: 224

Variable: \$ in paycheck

Equation:  $60 \cdot 3 = x$

Solution: \$180

15. Harper went to the mall and spent \$21. He purchased 3 t-shirts that all cost the same amount. How much did each shirt cost?

$$\begin{aligned} & \div \frac{3x = 21}{3} \div \\ & x = 7 \end{aligned}$$

Variable: cost of each shirt  
Equation:  $3x = 21$   
Solution: \$7

16. John and Sally each bought lunch. Together, they spent a total of \$19. If Sally's lunch cost \$8, how much did John's lunch cost?

$$\begin{array}{r} x + 8 = 19 \\ -8 \quad -8 \\ \hline x = 11 \end{array}$$

Variable: cost of John's lunch  
Equation:  $x + 8 = 19$   
Solution: \$11

17. Lauren had \$4, then earned another \$10. She used her money to purchase two pencils, each cost \$2, and a new pencil sharpener. If she spent all her money to purchase these items, how much did the pencil sharpener cost?

$$\begin{aligned} & 4 + 10 = 14 \\ & 2(2) + x = 14 \\ & 4 + x = 14 \end{aligned}$$

Variable: cost of sharpener  
Equation:  $x + 4 = 14$   
Solution: \$10

19. Wallace had \$4 on Monday before earning \$12 more by mowing his neighbor's lawn. Using his money, he purchased lunch and still had \$7 left. How much did his lunch cost?

$$\begin{aligned} & 4 + 12 = 16 \\ & x + 7 = 16 \\ & -7 \quad -7 \\ & \hline & x = 9 \end{aligned}$$

Variable: cost of lunch  
Equation:  $x + 7 = 16$   
Solution: \$9

19. Yolanda and Jasmine purchased new workout clothes for the gym. Jasmine spent 2 times as much as Yolanda. Together, they spent \$24. How much did each girl spend?

$$\begin{aligned} & 2x + x = 24 \\ & \checkmark \\ & 3x = 24 \\ & \frac{3x}{3} = \frac{24}{3} \quad x = 8 \end{aligned}$$

Variable: \$ each girl spent  
Equation:  $3x = 24$   
Solution: Yolanda = \$8 Jasmine = \$16