Write your questions here!

[PACKET 3.1: SOLVING ONE-STEP EQUATIONS] 1

CONCEPT SUMMARY — PROPERTIES OF EQUALITY

ADDITION PROPERTY OF EQUALITY	If $a = b$, then $a + c = b + c$.
SUBTRACTION PROPERTY OF EQUALITY	If $a = b$, then $a - c = b - c$.
MULTIPLICATION PROPERTY OF EQUALITY	If $a = b$, then $ca = cb$.
DIVISION PROPERTY OF EQUALITY	If $a = b$ and $c \neq 0$, then $\frac{a}{c} = \frac{b}{c}$.

Inverse Operations:

Operation	Inverse Operation
Addition +	Subtraction -
Subtraction -	Addition +
Multiplication *	Division ÷
Division ÷	Multiplication *

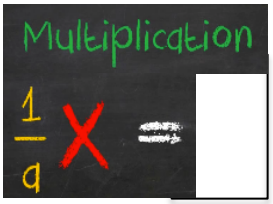
Examples:

1. $\square + 3 = 7$
2. $\square + 8 = 16$
3. $x - 2 = 3$

Rule

What you do to _____ you must do to the _____!

4. $\square - 5 = 1$
5. $3x = 9$
6. $6x = 36$



Write your questions here!

7. $23 = -p$

8. $\frac{1}{2}\square = 3$

9. $\frac{1}{5}\square = 4$

10. $\frac{4}{3}X = 8$

11. $\frac{4}{x} = 2$

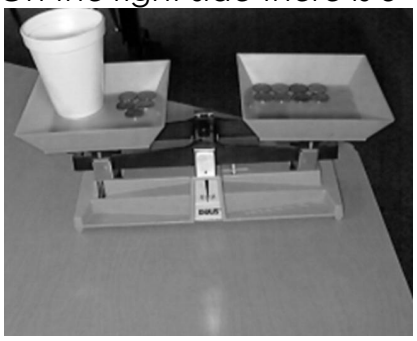
12. The sum of 22 and Donnie's score is 42.

13. An American Flag has an area equal to 9.5 sq. feet while the length is equal to 1.9 ft. Find the width.

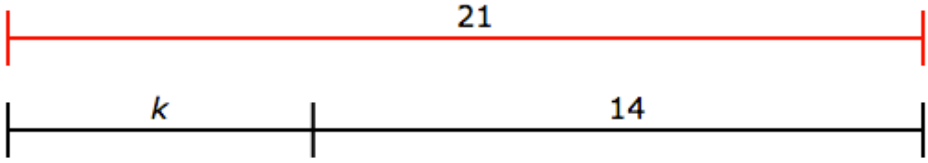
Now, summarize your notes here!

3.1 *One Step Equations* Practice *Problems*

1. How many pennies are in the cup (assume the cup weighs nothing)?

Problem & Visual	***Equation***	***Number of Pennies in the cup***
On the left side there is 1 cup and 5 pennies. On the right side there is 8 pennies. 		

2. Write an equation that says that the length of the red line is equal to the length of the black line. Then solve.

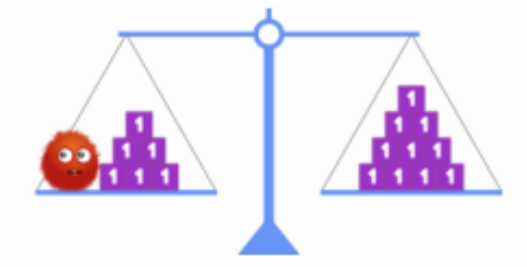


Equation:

k = _____

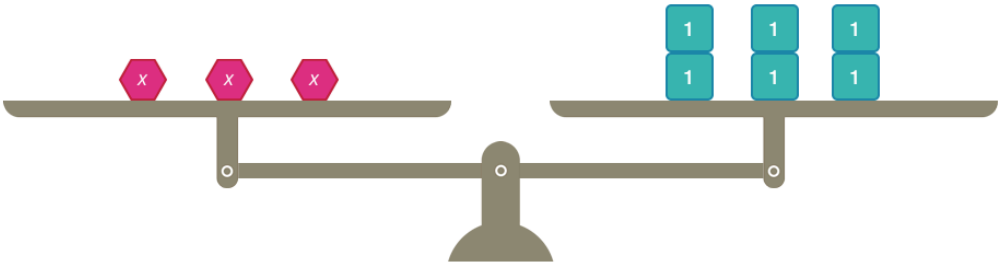
3. How much does the red guy weigh?

Equation:



Answer: _____

4. What is the value of x?



Answer: _____

Solve each equation.

5. $10x = 150$	**6.** $9 = \frac{n}{3}$	**7.** $\frac{a}{4} = \frac{15}{4}$	**8.** $8 + x = 9$
9. $15 = \frac{v}{2}$	**10.** $0 = 10 + b$	**11.** $v - 11 = 7$	**12.** $-4 = -2n$
13. $-m = -33$	**14.** $x - 7 = -6$	**15.** $-3 = k + 3$	**16.** $16.4 = n + 18.9$
17. $5p = -60.5$	**18.** $25.6 = r + 14.1$	**19.** $\frac{9}{5} + n = \frac{4}{5}$	**20.** $\frac{36}{7} = \frac{9}{14} + n$

Solve for x. *Circle the property of equality you used to solve the equation.*			
21. $y + 3.4 = 0.5$	Addition Subtraction Multiplication Division	**22.** $21 = -7n$	Addition Subtraction Multiplication Division
23. $\frac{1}{2}x = 14$	Addition Subtraction Multiplication Division	**24.** $x - \frac{1}{4} = -\frac{3}{4}$	Addition Subtraction Multiplication Division
25. $r - \pi = \pi$	Addition Subtraction Multiplication Division	**26.** $h + 2\pi = 3\pi$	Addition Subtraction Multiplication Division
27. $-\frac{2}{3}x = 12$	Addition Subtraction Multiplication Division	**28.** $\frac{y}{4} = -7$	Addition Subtraction Multiplication Division
29. $\pi x = 3\pi$	Addition Subtraction Multiplication Division	**30.** $0.09w = 1.8$	Addition Subtraction Multiplication Division

Solve for x. Show work and check for correctness by plugging in your answer to the original equation.

31. $x-9=-17$		**32.** $-3x=2$	
33. $16=\frac{k}{11}$		**34.** $y+16=5$	
35. $-15x=0$		**36.** $\frac{160.8}{x}=-0.4$	
37. $-7.8=n-2.6$		**38.** $-7x=-4$	
39. $-\frac{3}{2}=3n$		**40.** $\frac{3}{4}x=-\frac{1}{3}$	

Quick Review	1. Multiply: $\frac{3}{4}\cdot\frac{4}{3}$	2. Evaluate if x = 3 and y = -5 3x - y	3. Simplify: $\frac{3+4}{21}-4$
Coming Up	1. Distribute: -5(-2x - 2)	2. Simplify: 2x - 4y - 3x + y	3. Plot (-3, 2) 

Application And Extension

Write and Solve an equation to find each number.

1. The sum of –5 and a number is –15.

2. The product of −7 and a number is −35.

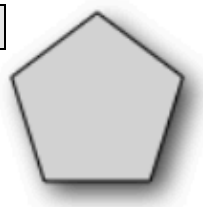
Write and Solve an equation to find each number.

3. The difference of a number and 3 is –6.

4. The quotient of -36 and x is 4.

Define a variable. Then write and solve an equation for each situation.

5. The Pentagon is the headquarters of the United States Department of Defense. Its shape is a regular pentagon, and its ***perimeter*** is about 1.6km. How long is one side of the Pentagon? Write an equation and solve it to find the answer.



Equation:

Answer:

6. The temperature rose 16 degrees to 3°F. What was the original temperature?

Equation:

Answer:

7. The melting point of mercury is about ¼ of the melting point of krypton. The melting point of mercury is $-39°C$. Find the melting point of krypton.

Equation:

Answer:

8. VOTING In the eighth grade, 322 students voted for the new mascot to be a tiger. This was $\frac{7}{10}$ of the total number of students in the eighth grade. How many students are in the eighth grade?

Equation:

Answer:

9. TEMPERATURE Overnight, the temperature dropped 1.3 degrees every hour. How many hours did it take the temperature to drop 7.8 degrees?

Equation:

Answer:

10. ELECTIONS In the 2000 presidential election, Indiana had 12 electoral votes. That was 20 votes fewer than the number of electoral votes in Texas. Write and solve an equation to find the number of electoral votes in Texas.

Equation:

Answer:

11. HEART RATE Melinda's heartbeats 15 times during $\frac{1}{6}$ of a minute. At that rate, how many times does her heart beat each minute?

Equation:

Answer:

12. FINANCIAL LITERACY Candace used $\frac{5}{8}$ of her savings to buy a $531.25 laptop. How much did she have in savings before purchasing the laptop?

Equation:

Answer:

13. FREE RESPONSE

A) Describe in words how to solve a one-step equation.

B) Write and solve a one-step equation.

14. Introduction to the distance formula.

Distance Introduction

The distance problems we will see will require us to know how these variables are related:

Distance
Rate
Time

When traveling a certain distance, it is done at a certain speed (rate) for a certain length of time. The formula that ties these variables together is…

$$d = r \cdot t$$

Using the Formula

Example 1: *"A man has to bicycle 30 miles. He will travel at 6 mph. How long will it take?"*

Example 2: *"A bug travels at a rate equal to 3 inches per hour. How far will it travel in 4 hours?"*

Example 3: *"An asteroid travels 300,000 miles in 4 hours. How fast was it traveling?"*