

Warm up

Evaluate

$$1. \quad 3 \cdot 2 + \frac{5}{9} \quad \frac{6 \cdot 9}{1 \cdot 9} + \frac{5}{9} = \frac{54}{9} + \frac{5}{9} = \frac{59}{9}$$

$$2. \quad \frac{1}{2} \cdot 26 - 3^2 \quad \frac{1}{2} \cdot 26 - 9 = 13 - 9 = 4$$

$$3. \quad [(6 - 4)^2 + 3] + 15 \quad [2^2 + 3] + 15 = (4 + 3) + 15 = 7 + 15 = 22$$

$$4. \quad \frac{4 \cdot 2^5}{16 - 4^2 + 1} = \frac{4(32)}{16 - 16 + 1} = \frac{128}{0 + 1} = \frac{128}{1} = 128$$

Homework Questions?

$$8) \quad 15 - 5 + 3 \div 4$$

$$15 - 5 + 0.75$$

$$10 + 0.75$$

$$10.75$$

$$12 + 6 \div 3 - 2$$

$$12 + 2 - 2$$
$$14 - 2 = 12$$

On the top of your paper (by your name) rate yourself for this section:

4 - I can summarize the concepts and explain it to others

3 - I can apply the concept to answer questions correctly

2 - I can apply the concepts but with some mistakes

1 - I need help and know how to apply the concept

0 - I can't apply the concept, even with help

Rating of 0-2 is a warning signal to me that you need help

1.4 Equations and Inequalities

Goals:

- Check solutions of equations and inequalities

EQ: How can you tell if a number is a solution to an equation or inequality?

Vocabulary

Equation:

must have an = sign

Solution:

makes it true

Inequality:

$<$
less
than

$< \text{ or } =$
 \geq

$>$
greater
than

Example 1: Check Possible Solution

Check whether the numbers 1, 2, and 3 are solutions of the equation $2x + 3 = 5$.

Solution

Substitute each possible solution into the equation. If both sides of the equation have the same value, then the number is a solution.

x	$2x + 3 = 5$	Result	Conclusion
1	$2(1) + 3 = 5$ $2 + 3 = 5$	$5 = 5$ ✓	Yes, $x = 1$ is soln.
2	$2(2) + 3 = 5$ $4 + 3 = 5$	$7 \neq 5$	No, $x = 2$ is not soln.
3	$2(3) + 3 = 5$ $6 + 3 = 5$	$9 \neq 5$	No, $x = 3$ is not soln.

Example 2: Solve Equations with Mental Math

To solve equations with mental math, think of the equation as a question.

Equation	Question	Solution
$3x = 12$	<u>3</u> times <u>a #</u> gives <u>12</u> ?	$3 \cdot \underline{4} = 12$, so $x = \underline{4}$
$x - 4 = 9$	<u>A #</u> minus <u>4</u> equals <u>9</u> ?	$\underline{13} - 4 = 9$, so $x = \underline{13}$
$9 = x + 6$	<u>9</u> equals <u>A #</u> plus <u>6</u> ?	$9 - \underline{3} + 6$, so $x = \underline{3}$

****Note:** Solving the equation is finding all the solutions of an equation.

Example 3: Check Solutions of InequalitiesDecide whether 3 is a solution of the inequality.

a. $x + 5 < 9$

$3 + 5 < 9$

$8 < 9 \checkmark$

Yes, $x=3$ is
soln.

b. $3x + 2 \leq 11$

$3(3) + 2 \leq 11$

$9 + 2 \leq 11$

$11 \leq 11$

Yes, $x=3$ is
soln.

c. $x - 1 > 4$

$3 - 1 > 4$

$2 > 4$

No, $x=3$
Not soln.

Try It Decide whether the given number is a solution of the inequality.

1. $35 - 7c > 20$; $2 = c$

$35 - 7(2) > 20$

$35 - 14 > 20$

$21 > 20$

Yes, $c=2$ is
soln.

2. $\frac{63}{y} \leq 21$; 2

$\frac{63}{2} \leq 21$

$31.5 \leq 21$

No, $y=2$ is
Not soln.

1.4 Summary

EQ: How can you tell if a number is a solution to an equation or inequality?

Plug in # for variable,
Simplify.
If True, then solution

1.5 Translating Words into Mathematical Symbols

Goals:

- Translate words into mathematical symbols

EQ: What are common translations for +, -, \times , and \div ?

Vocabulary

Translate:

switch between phrases + math symbols

Phrase:

order is important

Sentence:

have "is" in sentence turns it into an equation (or inequalities)

$+$ sum
 $-$ difference
 \times product
 \div quotient

Example 1: Translate Addition and Subtraction Phrases

Write the phrase as a variable expression.

Let x represent the number.

Phrase

Translation

A number plus 9

$$\underline{x + 9}$$

The sum of 12 and a number

$$\underline{12 + x}$$

A number *increased* by 2

$$\underline{x + 2}$$

19 *more than* a number

$$\underline{19 + x}$$

A number *decreased* by 17

$$\underline{x - 17}$$

The *difference* between 12 and a number

$$\underline{12 - x}$$

13 *minus* a number

$$\underline{13 - x}$$

1 less than a number

$$\underline{\textcircled{x - 1}}$$

****Note:** Order is important for subtraction. "4 less than a number" means $y - 4$, not $4 - y$.

Try It Write the phrase as a variable expression.
Let x represent the number.

1. 17 minus a number

$$17 - x$$

2. A number increased by 5

$$x + 5$$

1.5 Summary

EQ: What are common translations for $+$, $-$, \times , and \div ?

Homework: -Ch.1 Review (p.1)

-work on Crossword

****BOOK COVER DUE TOMORROW***