1-1 Variables in Sentences

Warm-up

1. Name 2 similarities and 2 differences between the following...

$$4x + 2 = 10 \qquad 4x + 2$$

Similarities: **Differences:**

1. both adding   1. only one has $= 10$
2. both have $4x$ 2. —

2. What is a verb? an action word (equals or is)

3. Define the following symbols...

inequalities

a) $<$ less than
b) $>$ greater than
c) $\geq$ greater than or equal to
d) $\leq$ less than or equal to
e) $\sqrt{}$ square root
f) $\approx$ about/approximately
g) $\neq$ not equal to

Vocabulary	Definition	Example
Variable	a letter used to represent a #	$x, y, n, a,$
Sentence	has an equal or inequality sign	$2x + 3 = 9$
Math Verbs	$=, \neq, <, >, \leq, \geq$	
Equation	has an $=$	$2 + 2 = 4$ or $2x + 2 = 4$
Expression **add**	No $=$ sign	$2x + 2$
Inequality	$<, >, \leq, \geq$	$4 < 7$
Open Sentence	has a variable	$2x + 2 = 4$
Solution	The answer	$x + 5 = 9$ $\boxed{x = 4}$

1. Write an inequality that compares 2/5 and 3/4.

$$\frac{2}{5} \overset{\times 4}{=} \frac{8}{20} \quad \times 4$$

$$\frac{3}{4} \overset{\times 5}{=} \frac{15}{20} \quad \times 5$$

$$\frac{2}{5} < \frac{3}{4}$$

$$\frac{2}{5} \;\textcircled{<}\; \frac{3}{4}$$

.40   .75

2. Which numbers 7, 8, 9, or ~~10~~ is a solution to the following open sentence?

$$2x + 42 > 7x$$

yes!

$x = 7$?

$2 \cdot 7 + 42 > 7 \cdot 7$

$14 + 42 > 49$

$56 > 49$

Yes

yes

$x = 8$?

$2 \cdot 8 + 42 > 7 \cdot 8$

$16 + 42 > 56$

$58 > 56$

yes

~~$x = 9$~~

$2 \cdot 9 + 42 > 7 \cdot 9$

$18 + 42 > 63$

$60 > 63$

Nope

3. Find all solutions to $x^2 = 81$.

$x = 9$ $x = -9$

$x \cdot x = 81$

$9 \cdot 9 = 81$ AND $-9 \cdot -9 = 81$

4. Find all integer solutions to $x^3 = -8$.

$..., -3, -2, -1, 0, 1, 2, 3, ...$

$x \cdot x \cdot x = -8$

$-2 \cdot -2 \cdot -2 = -8$

$x = -2$

5. Bob earns more than $25 a week.

a) Write an open sentence describing the amounts e that Bob can earn in a week.   has a variable

$e = $ money earned

$e > 25$

b) List three possible solutions.

$\$26, \; \$50, \; \$31$