

SOL Review Packet #1

1

Name: _____

The student will represent verbal quantitative situations algebraically and evaluate these expressions for given replacement values of the variables.

Hints and Notes

Order of Operations:

- Parentheses
- Exponents
- Multiplication and Division
- Addition and Subtraction

Key Words:

(+) addition, sum, increase, total

(-) subtraction, difference, minus, less than, decrease

(x) multiplication, product, times, twice(2), double(2)

(÷) division, quotient, into, half, shared

**the word THAN switches the order of words

TI-83 Help

- When substituting values for variables use ()
- Always put negative #'s in ()

Store values for variables:

Sto alpha letter
enter

10 → L

Practice A.1 Expressions

① Translate: Six less than the product of eight and a number _____

② $\frac{4b+12}{3a+2c}$ for $a=8, b=5, c=-4$ _____

③ The sides of a triangle are $2x-1, x+5,$ and $3x-7$. What is the perimeter. _____

④ Simplify $4a-5(6+7a)$ _____

⑤ Simplify $6a^2$ for $a=-3$ _____

⑥ $\frac{3}{4}(12-4) + 32 + 4 \cdot (-6)$ Simplify _____

⑦ $-|-10| + \frac{3-39}{4}$ Simplify _____

⑧ $\sqrt[3]{x} + y \cdot p$ for $x=8, y=-28, p=\frac{1}{2}$ _____

⑨ $\frac{x^2+y^2}{x^2-y^2}$ for $x=-1, y=-4$ _____

⑩ Simplify _____

$\frac{1}{2}(2x+8) + \frac{3}{4}(4x-16)$ _____

The student will solve multi-step linear and quadratic equations in two variables, including

- solving literal equations (formulas) for a given replacement variable.
- justifying steps used in simplifying expressions and solving equations, using field properties and axioms of equality that are valid for the set of real numbers and its subsets.

HINTS and NOTES

Properties:

- **Associative Property**
 (+) $a + (b + c) = (a + b) + c$
 (x) $a(bc) = (ab)c$
- **Commutative Property**
 (+) $a + b + c = b + a + c$
 (x) $abc = cba$
- **Distributive Property**
 $a(b + c) = ab + ac$
- **Identity Property**
 (+) $a + 0 = a$
 (x) $a(1) = a$
- **Inverse Property**
 (+) $a + (-a) = 0$
 (x) $a \cdot \frac{1}{a} = 1$
- **Reflexive Property**
 $a = a$
- **Symmetric Property**
 If $a = b$ then $b = a$
- **Transitive Property**
 If $a = b$ and $b = c$ then $a = c$
- **Addition Property of Equality**
 Adding the same term to both sides of the equation
- **Subtraction Property of Equality**
 Subtracting the same term from both sides of the equation
- **Multiplication Property of Equality**
 Multiplying the same factor to both sides of the equation
- **Division Property of Equality**
 Dividing the same divisor on both sides of the equation

Properties

- Name the properties:
 - $2 + 5 + 8 = 5 + 2 + 8$ _____
 - $6(3x + 2) = 18x + 12$ _____
 - $(x + 3) + 2 = x + (3 + 2)$ _____
 - $4 + (-4) = 0$ _____
- Which property of real numbers justifies going from step 3 to step 4?

(given) $-3(4x + 2) + 7x = 39$
 (step 1) $-12x - 6 + 7x = 39$
 (step 2) $-5x - 6 = 39$
 (step 3) $-5x = 45$
 (step 4) $x = -9$

 - Addition Property of Equality
 - Additive Inverse Property
 - Distributive Property
 - Division Property of Equality
- Which property justifies the equation

$$4(x - 5) = 4x - 20$$
 - Commutative Property of Multiplication
 - Associative Property of Multiplication
 - Multiplication Property of Equality
 - Distributive Property
- Which property justifies the statement $\frac{-2}{3} \cdot \frac{-3}{2} = 1$?
 - Multiplication Identity Property
 - Multiplication Inverse Property
 - Multiplication Property of Equality
 - Commutative Property of Multiplication

Property TE1

10. The following inequality has been solved. In each step, provide the property that justifies each step by clicking and dragging the property to each step.

Given	Distributive Property	Associative Property of Addition	Multiplicative Inverse Property
Commutative Property of Addition	Addition Property of Inequality	Associative Property of Multiplication	Zero Property of Multiplication
Commutative Property of Multiplication	Subtraction Property of Inequality	Additive Inverse Property	Property of Negative One
Multiplication Property of Inequality	Division Property of Inequality	Substitution Property of Inequality	Reflexive Property of Inequality
Reflexive Property of Inequality	Symmetric Property of Inequality	Transitive Property of Inequality	

$-3(-2x - 7) + 3 \leq 10(2x - 2) - 12$	_____	$(x + 3) = 4 + 3x$	_____
$6x + 21 + 3 \leq 20x - 20 - 12$	_____	$7(x + 3) = 4 + 3x$	_____
$6x + 24 \leq 20x - 32$	_____	$7x + 21 = 4 + 3x$	_____
$-14x + 24 \leq -32$	_____	$7x + 21 = 3x + 4$	_____
$-14x \leq -56$	_____	$4x + 21 = 4$	_____
$\frac{-14x}{-14} \leq \frac{-56}{-14}$	_____	$4x = -17$	_____
$x \geq 4$	_____	$\frac{1}{4}(4x) = \frac{1}{4}(-17)$	_____
		$x = \frac{-17}{4}$	_____

The student will solve multistep linear and quadratic equations in two variables, including
 d) Solving multistep linear equations algebraically and graphically.

HINTS and NOTES

- Solving Multistep Equations
- Distribute
 - Get rid of fractions
 - Combine Like Terms on same side of equal sign
 - Get rid of add/sub.
 - Get rid of mult/div.

DFCAM

$x = \#$
 one answer

When all variables go away:

$0 = 0 \quad \infty$
 $4 = 8 \quad \emptyset$

Equations

① Solve $4(x+1) = 2(11-x)$ _____

② Solve $2 - \frac{3}{4}x = \frac{1}{8}x + 9$ _____

③ Solve $\frac{x+3}{4} = \frac{2x+6}{3}$ _____

④ Solve $-5x - 10 = 2 - (x-4)$ _____

⑤ Solve $5(x+2) + 3(x-6) = 2(x+4)$ _____

⑥ TE1: Drag and Drop these equations to the boxes below:

$10(x+3) + 8 = 18x + 30$

$4(6a+3) = 6(4a+2)$

$12(c+3) - 30 = 12c + 36$

$16n - 20 = 4(5n+1)$

One Solution	No Solutions \emptyset	Infinitely Many Solutions ∞

⑦ $A = \frac{1}{3} \pi r h$ Solve for $r =$ _____

The student will solve multistep linear inequalities in two variables, including

- Solving multistep linear inequalities algebraically and graphically;
- Justifying steps used in solving inequalities, using axioms of inequality and properties of order that are valid for the set of real numbers and its subsets;
- Solving real-world problems involving inequalities

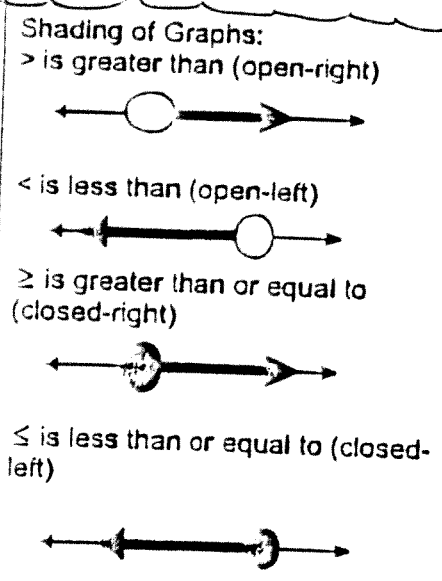
HINTS and NOTES

Reminder: Inequalities have a solution set and can be written in set builder notation $\{x|x \leq 32\}$
 "For all x such that x is less than or equal to 32."

To solve inequalities:

- USE OFCAM
- THEN GRAPH THE SOLUTION

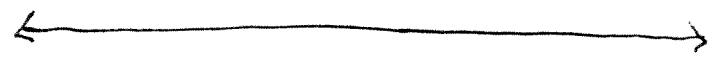
ERROR ALERT- Switch direction of the comparison sign when $+/-x$ by negative number during solving.



Inequalities

- Solve $-5x + 5 > 25$
- Solve $2x - 11 \geq 5(x + 3)$
- Solve $\frac{1}{2}(2x + 8) \geq 4x - 2$
- Joel sells ice cream cones at the County fair. He has to rent equipment for \$36 and spend \$0.52 on ingredients for each cone. What is the minimum number of ice cream cones Joel must sell at \$1.40 each in order to make a profit?

5) Solve and graph:
 $-8(3x - 2) \geq -200$



6) Circle the incorrect step in each student's work

Sam's Solution	Joe's Solution
$3 - 7x \geq -6$	$3 - 7x \geq -6$
$7x - 3 \geq 6$	$-7x \geq -3$
$7x \geq 9$	$x \geq \frac{-3}{7}$
$x \leq \frac{9}{7}$	

