

Name Stew Dent

Date \_\_\_\_\_

**Expressions and Equations Review Packet**



1) Vocabulary

Don't forget to study your terms. The Quizlet is a great resource.

2) Evaluating Expressions

Input the values and simplify using Order of Operations (PEMDAS/GEMS)

$m$	$m + 7$	
5	12	$5+7$
8	15	$8+7$
20	27	$20+7$

$d$	$\frac{d}{2}$	
6	3	$\frac{6}{2}$
10	5	$\frac{10}{2}$
42	21	$\frac{42}{2}$

$n$	$4n + 3$	
4	19	$16+3$
6	27	$24+3$
12	51	$48+3$

3) Verbal Phrases

Writing Expressions:

- a) 5 more than a number  $n+5$
- b) The sum of 8 and a number  $8+n$
- c) Half of a number  $n \div 2$  or  $\frac{n}{2}$
- d) 12 less than a number  $n-12$
- e) Jane is twice as old as Ed. How old is Jane if Ed is  $d$  years old?  $2 \cdot d$
- f) If you read 9 pages a day for  $d$  days. How many pages did you read?  $9d$

Writing Equations:

- a) The sum of 25 and a number is 34  $25+n=34$
- b) Jan has  $d$  dollar in her bank account. She spends \$12 and has \$54 left  $d-12=54$
- c) Peter makes \$12 an hour ( $h$ ) stacking wood. He now has \$288  $12h=288$

Writing Inequalities:

- a)  $x$  is less than 10  $x < 10$
- b)  $y$  is greater than 52  $y > 52$
- c)  $x$  is no more than 89  $x \leq 89$
- d)  $x$  is at most 150 lbs.  $x \leq 150$
- e) You must be at least 54 inches to ride on the roller coaster  $x \geq 54$

4) Combine Like Terms

Only combine terms that are 'alike'. Use Highlighters

Only use an exponent if the variables are being multiplied

a)  $4x + 3x + 7 + 2$

$7x + 9$

b)  $7x + 2y + 3x + 2 + y$

$10x + 3y + 2$

c)  $6m + 12 - 2m - 1$

$4m + 11$

d)  $4c + 4d + 7c - 3d$

$11c + d$

e)  $4b + 3a + 7b + 2a$

$11b + 5a$

f)  $4g - 2g + 7h - 2h$

$2g + 5h$

Complete the table by expanding or combining each expression.

Expanded Terms	Combined Terms
$b + b + b + b + b$	$5b$
$m + m + m + m$	$4m$
$a + a + a$	$3a$
$p + p + p + p + n$	$4p + n$
$x + x + y + x + y$	$3x + 2y$

5) Distribute and Combine Like Terms

Santa Hat- Multiply EVERY term in the parentheses



a)  $5(x + 3)$

$5x + 15$

b)  $9(7 - 3j)$

$63 - 27j$

c)  $4(2x + 3y - 6)$

$8x + 12y - 24$

d)  $4(2x + 3) + 3x$

$8x + 12 + 3x$

e)  $9(4 - 3b) - 12$

$36 - 27b - 12$

f)  $4(4a + 3) - 6a + 2$

$16a + 12 - 6a + 2$

6) Factor

$11x + 12$

$24 - 27b$

$10a + 14$

Pull out the GCF (take out the largest group of friends). Distribute to check.

a)  $5x + 10 \div 5$

$5(x + 2)$

b)  $12m - 24 \div 12$

$12(m - 2)$

c)  $2 - 6a \div 2$

$2(1 - 3a)$

d)  $4m + 12n - 8 \div 4$

$4(m + 3n - 2)$

e)  $18x + 27y - 63 \div 9$

$9(2x + 3y - 7)$

f)  $42g - 56 \div 14$

$14(3g - 4)$

7) Solving One-Step and Two-Step Equations

Use inverse operation to solve equations.  
Input your solution to check your answers.

a)  $5x = 45 \quad \div$   
 $\frac{5x}{5} = \frac{45}{5}$

$x = 9$

Check:  $5 \cdot 9 = 45 \checkmark$   
 $45 = 45$

b)  $m - 2.4 = 3 \quad +$   
 $+2.4 \quad +2.4$

$m = 5.4$

Check:  $5.4 - 2.4 = 3$   
 $3 = 3 \checkmark$

c)  $c + 19 = 45 \quad -$   
 $-19 \quad -19$

$c = 26$

Check:  $26 + 19 = 45$   
 $45 = 45$

d)  $\frac{x}{9} + 5 = 12$

NOT ON TEST

ON TEST:

$\frac{x}{4} = 12 \quad \times$

Check:

$\frac{x}{4} = 12 \quad \times$   
 $\Rightarrow \frac{x}{4} \cdot 4 = (12) \cdot 4$

Check:

$x = 48$

f)  $3(g + 2) = 16$

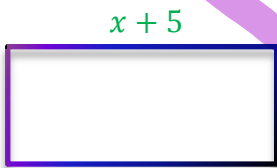
NOT ON TEST

Check:  $\frac{48}{4} = 12$   
 $12 = 12 \checkmark$

8) Area and Perimeter

Write an equation and find the missing side length for each.

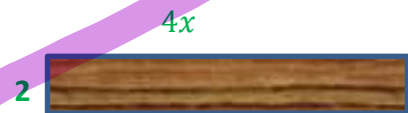
a) The perimeter of the rectangle is 36ft.



Equation:

Missing Side Lengths:

b) The area of the rectangle is 48m<sup>2</sup>



Equation:

Missing Side Lengths:

TEST

NOT

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## 9) Tables and Rules

Find the Rule in the input/output table and write the equation

Determine the 'independent variable' and the 'dependent variable'

Independent Variable- Input value. Usually x

Dependent Variable- Output Value. Usually y

x	y
2	7
3	8
4	
	14

Equation:  $x + 5 = y$

Independent Variable: x

Dependent Variable: y

m	n
9	7
11	9
13	
	24

Equation:  $m - 2 = n$

Independent Variable: m

Dependent Variable: n

a	b
3	9
5	15
7	
	36

Equation:  $a \cdot 3 = b$

Independent Variable: a

Dependent Variable: b

g	h
12	2
18	3
24	
	8

Equation:  $g \div 6 = h$

Independent Variable: g

Dependent Variable: h

## 10) Is the value a solution to the inequality?

a)  $m = 5$

$m < 5$        $5 < 5$

yes or no?  no

b)  $g = -7$

$g \leq -7$        $-7 \leq -7$

yes or no?  yes

c)  $y = 0$

$5 \leq y$        $5 \leq 0$

yes or no?  no

d)  $h = 2.4$

$h < 3$        $2.4 < 3$

yes or no?  yes

e)  $m = 3$

$m + 2 \leq 5$        $3 + 2 \leq 5$

yes or no?  yes

f)  $g = 3$

$2g \geq 7$        $2(3) \geq 7$   
 $6 \geq 7$

yes or no?  no

g)  $y = 0$

$4 \geq 5y$        $4 \geq 5(0)$   
 $4 \geq 0$

yes or no?  yes

h)  $h = 1.9$

$h + 0.9 < 3$

yes or no?  yes

$1.9 + 0.9 < 3$   
 $2.8 < 3$

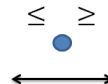
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## 11) Graphing Inequalities

Graph the Inequality



I have a cold.  
A stuffy nose  
and bags under  
my eyes.

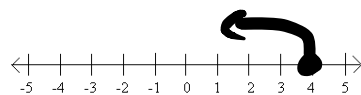
a)  $x < 2$



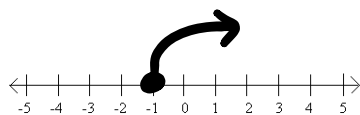
b)  $x > -3$



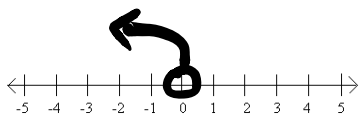
c)  $x \leq 4$



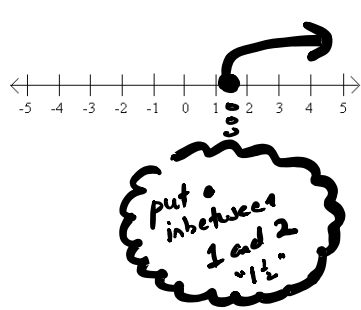
d)  $x \geq -1$



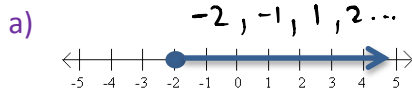
e)  $x < 0$



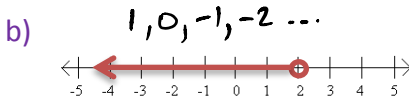
f)  $x \geq 1.5$



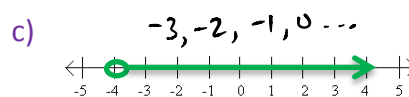
Write an Inequality



Inequality:  $x \geq -2$



Inequality:  $x < 2$



Inequality:  $x \geq -4$

### Additional Suggestions:

Use 'checking' strategies that we have been talking about in class.

Review your Quiz. Make sure you understand your errors.

Come and see me before or after school on Tuesday if you need help.

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