

Unit 8 Study Guide

Check the correct column. *May apply to more than one*	Expression	Equation	Inequality
1) A mathematical phrase	✓		
2) $x \geq 9$			✓
3) Like a balanced scale		✓	
4) $7 + 1$	✓		
5) $7 + 1 = 8$		✓	
6) $7 + 1 \geq 8$			✓
7) Can contain operation symbols (+, -, x, /)	✓	✓	✓
8) $0.35 + 7(2) - 12 + 3^0$	✓		
9) Usually has one solution		✓	
10) Like an unbalanced scale			✓

11) Is $x = 3$ a solution to the inequality: $3x + 5 - 2x + 8 < 16$?

No $3(3) + 5 - 2(3) + 8 < 16$
 $9 + 5 - 6 + 8$
 $14 - 6 + 8$
 $8 + 8$ $16 < 16$

12) Is $x = 2$ a solution to the equation: $2(x+5) + 3x - 4 = 11$

No $2(2+5) + 3(2) - 4 = 11$
 $14 + 6 - 4$
 $20 - 4$ $= 11$
 $16 \neq 11$

For questions 13-17, solve and check your equation.

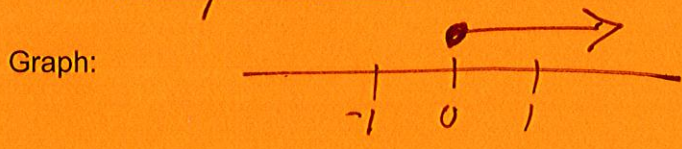
Solve	Check
13) $3x + 4x = 140$ $\frac{7x}{7} = \frac{140}{7}$ $x = 20$	$3(20) + 4(20) = 140$ $60 + 80$ $140 = 140$ ✓
Change 14) $y - 20 = 54$ $+20 \quad +20$ $y = 74$	$74 - 20 = 54$ $54 = 54$ ✓

<p>15) $3 \cdot \frac{x}{3} = 15 \cdot 3$</p> <p>$x = 45$</p>	<p>$\frac{45}{3} = 15$</p> <p>$15 = 15 \checkmark$</p> <p>$3 \overline{)45}$ $\underline{15}$ 15 $\underline{15}$ 0</p>
<p>16) $45.5 = x + 12.4$</p> <p>-12.4 -12.4</p> <p>$33.1 = x$</p>	<p>$45.5 = 33.1 + 12.4$</p> <p>$45.5 = 45.5 \checkmark$</p>
<p>17) $5(3p + 4) - 20 = 40 + 5$</p> <p>$15p + 20 - 20 = 45$</p> <p>$15p = 45$</p> <p>$\frac{15p}{15} = \frac{45}{15}$</p> <p>$p = 3$</p>	<p>$5(3(3) + 4) - 20 = 40 + 5$</p> <p>$5(9 + 4) - 20 = 45$</p> <p>$5(13) - 20$</p> <p>$65 - 20 = 45 = 45 \checkmark$</p>

For problems 18-21, write the inequality to represent the situation AND graph on a number line:

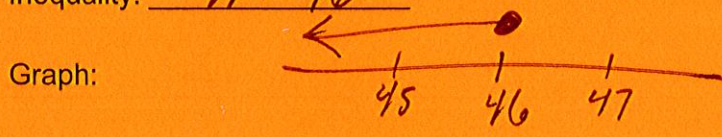
18) You can earn a minimum of zero points on this test.

Inequality: $p \geq 0$



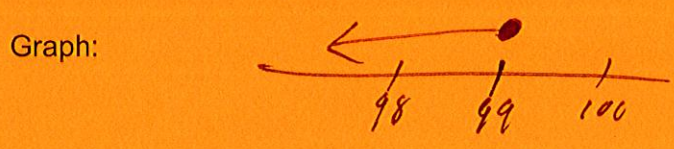
19) The maximum height that you can be to play in the children's area at Chic-Fil-A is 46 inches.

Inequality: $h \leq 46$



20) The volume on the TV goes up to 99.

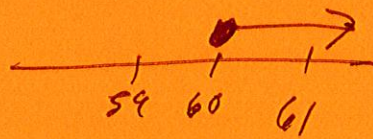
Inequality: $V \leq 99$



21) Analiese is at least 60 years old.

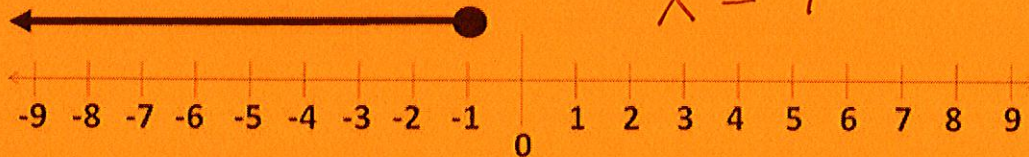
Inequality: $y \geq 60$

Graph:



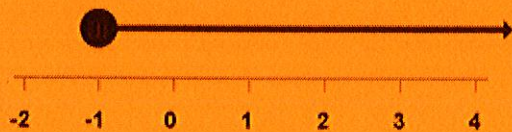
For questions 22 to 24, write an inequality to match the graph.

22)



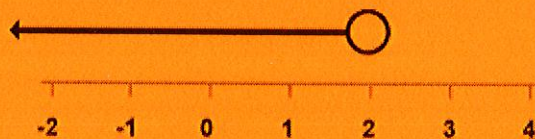
$x \leq -1$

23)



$y \geq -1$

24)



$z < 2$

For questions 25 to 28, define your variable, write an equation, and solve.

25) John needs to save \$54 in order to buy a new video game. He has already saved \$23. How much more money does he need to save?

Let m = money needs to save

Equation $m + 23 = 54$

Solution $m = 31$

$$\begin{array}{r} m + 23 = 54 \\ -23 \quad -23 \\ \hline m = 31 \end{array}$$

31) Complete the table based on the following rule.

Rule: $y = \frac{x}{3} + 5$

x	y
12	9
15	10
24	13
30	15

32) Determine the rule for the table below (remember to write as $y =$).

x	y
3	1
6	2
12	4

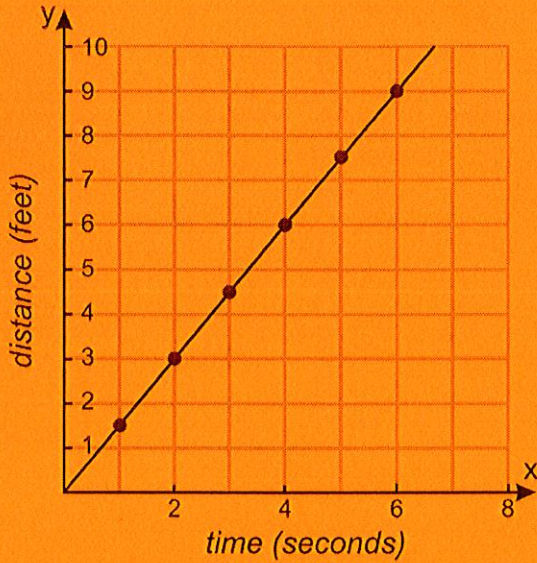
Rule $y = \frac{x}{3}$

33) Determine the rule for the following table (remember to write as $y =$).

x	y
5	9
6	10
9	13
12	16

Rule $y = x + 4$

34) Complete the x/y table and determine the rule for the following graph.



x	y
2	3
4	6
1	1.5
6	9

Rule $y = 1.5x$

For questions 35-37, circle the INDEPENDENT variable in the following situations:

35) Suzie and her friends are at an arcade and are redeeming their tickets for prizes. The number of prizes they can get is calculated based on how many tickets they have won.

p = the number of prizes the friends can get

t = the number of tickets the friends have won

36) Michael goes running every morning. The number of calories he burns during a run depends on the distance he runs.

c = the number of calories Michael burns during the run

d = the distance Michael runs

37) Allen and Brenda are going on a road trip together. They have a limited budget, so they consider several different routes and then calculate the cost of gas for each route. The longer the route, the greater the cost of gas.

g = the cost of gas

r = the length of the route