Name: Key

Practice Test #2 – Ch. 2 & 3
Beginning Algebra – M110

Instructions: *You may* ***not use a calculator*** *on this test so don't use one to practice. On the actual exam, all work must be shown in order to receive all points for all questions so practice showing all work. Practice* ***boxing your final answer****. Any answer that is a fraction must be in lowest terms and as mixed number for full credit. Since you can use a 5x8 notecard on the test use your notecard to practice or make one based on the problems you got wrong. Happy studying!*

1. Show the **exact** translation of the expression and don't simplify.

   Subtract (3.1x + 5) from (5.3x – 11.8)

   (5.3x − 11.8) − (3.1x + 5)

2. Fill in the following table by making the **conversions between decimals, fractions/mixed #'s and percentages**. *Work* must always be *shown* – I have left room below the table for that purpose. ***Do not round or approximate.***

Fraction	Decimal	Percent
$4/9$	$0.\overline{4}$	$44.\overline{4}$ % or $44\frac{4}{9}$%
$1\frac{1}{5}$	1.2	120%
$127/200$	0.635	63.5%

$0.444\ldots$, $9\overline{)4.000}$, −36, 40, −36, 40

$0.\overline{4} = 44.\overline{4}$%

$1\frac{2 \div 2}{10 \div 2} = 1\frac{1}{5}$

$120. = 120\%$

$63\frac{1}{2}\%$ $63 \times 2 = 126$, $+1 = 127$

.635

$\frac{127}{2}\% = \frac{127/2}{100}$

$\frac{127}{2} \div \frac{100}{1} = \frac{127}{2} \times \frac{1}{100} = \frac{127}{200}$

3. Multiply/Divide. All problems **must use decimals** and must show decimal placement and movement and/or borrowing. Do not round. For repeating, non-terminating decimals use a bar to show repeat.

a) -99 ÷ (0.9) $= \boxed{-110}$

− ÷ + = −

$0.9\overline{)99.0}$ → 110.

b) 477 ÷ 30 $= \boxed{15.9}$

$30\overline{)477.00}$ = 15.9; −30, 177, −150, 270

c) 45.8 ÷ 6

$= \boxed{7.6\overline{3}}$

$6\overline{)45.800}$ = $7.6\overline{3}$; −42, 38, −36, 20, −18, 20

d) $(-0.06)^2$ − × − = +

$= (-0.06)(-0.06) = \boxed{0.0036}$

6×6 with 4 decimals → 36

e) -1.5^2 The opposite of 1.5^2

$= -[(1.5)(1.5)] = \boxed{-2.25}$

15 × 15 = 225 w/ 2 decimals

f) $-|-9.14|$

$= \boxed{-9.14}$

g) $-(1.1 - 1.9)^2$

$= -(-0.8)^2$

$= -(0.64)$

$= \boxed{-0.64}$

(1.1 + −1.9): 1.9 − 1.1 = neg 0.8

−0.8 × −0.8 = +.64

h) $(5 - 4.5)^2$

$= (0.5)^2$

$= 0.5 \times 0.5$

$= \boxed{0.25}$

5.0 − 4.5 = 0.5

5×5 = 25 w/ 2 dec.

4. **Change subtraction to addition**. Do not add and do not simplify past the addition.

a) $14 - (-7)$ 14 plus opposite of -7 $= \boxed{14 + 7}$

b) $-89 - 19$ neg 89 plus opposite of 19 $= \boxed{-89 + -19}$

c) $-27 - (-13)$ neg 27 plus opposite of -13 $= \boxed{-27 + 13}$

5. Add/Subtract. Fractions must be used.

a) $-2\frac{1}{2} - (-4\frac{2}{5}) = -2\frac{1}{2} + 4\frac{2}{5}$

subtract & positive when done

$3\frac{22}{52}\ \frac{4}{10} + \frac{10}{10} = \frac{14}{10}$

$-2\frac{1\cdot5}{2\cdot5}\ \frac{5}{10}$

$\boxed{1\ \frac{9}{10}}$

b) $-\frac{11}{15}^{\cdot8} + \frac{7}{24}^{\cdot5}$ LCD $= 2^3 \cdot 3 \cdot 5 = 120$

$-(88-35)$

$-\frac{88}{120} + \frac{35}{120} = \boxed{\frac{-53}{120}}$

6. Translate the following exactly. Don't simplify after or during translation. Use x to represent any unknown number.

a) Three subtracted from twice a number.

$= \boxed{2x - 3}$

b) The quotient of 19 and a number $\boxed{\frac{19}{x}}$ or $\boxed{19 \div x}$ ← prefer

c) Joe is twelve years older than Zhang. Write an expression for Joe's age if you assume Zhang is the unknown number.

Joe = Zhang + 12 Zhang = x so $\boxed{\text{Joe} = x + 12}$

7. Evaluate using order of operations (show all work; each step in order of op.; numerator and denominator must both be taken to a single number regardless of the final answer)

a) $\frac{15 \cdot 2 + 34 - (-12 + 4)^2}{-3\,|\,8 - 18\,| \div 5 + 1}$

① $-(12-4) = -8$

$(-8)^2 = -8 \cdot -8 = 64$

② $8 + -18 = -(18-8) = -10$

③ $|-10| = 10$ so $-3(10) = -30$

$= \frac{30 + 34 - 64^{①}}{-3\,|^{②}-10| \div 5 + 1}$

$= \frac{64 - 64}{^{③}-30 \div 5 + 1} = \frac{0}{-6+1} = \frac{0}{-5} = \boxed{\text{zero}}$

b) $\frac{15 + 3 \cdot 2}{4 - |-2| - 2} = \frac{15+6}{4-2-2} = \frac{21}{2-2}$

$= \frac{21}{0}$

$= \boxed{\text{undefined}}$

Make sure to show denominator work even once numerator is shown to be zero, so answer would be zero.

8. Evaluate (use fractions): $-3mn \div n$ when $m = -\frac{3}{4}$ & $n = \frac{4}{5}$

$= -\frac{3}{1}\left(\frac{-3}{4}\right)\left(\frac{4}{5}\right) \div \left(\frac{4}{5}\right) = \frac{9}{5} \div \frac{4}{5} = \frac{9}{5} \times \frac{5}{4} = \frac{9}{4} = \boxed{2\frac{1}{4}}$

− · − = +

↑ prefer

9. Let the value of a car be "v" (in thousands of dollars). Every year after the car is purchased, "t" (in years), car's value decreases by 4 thousand dollars.

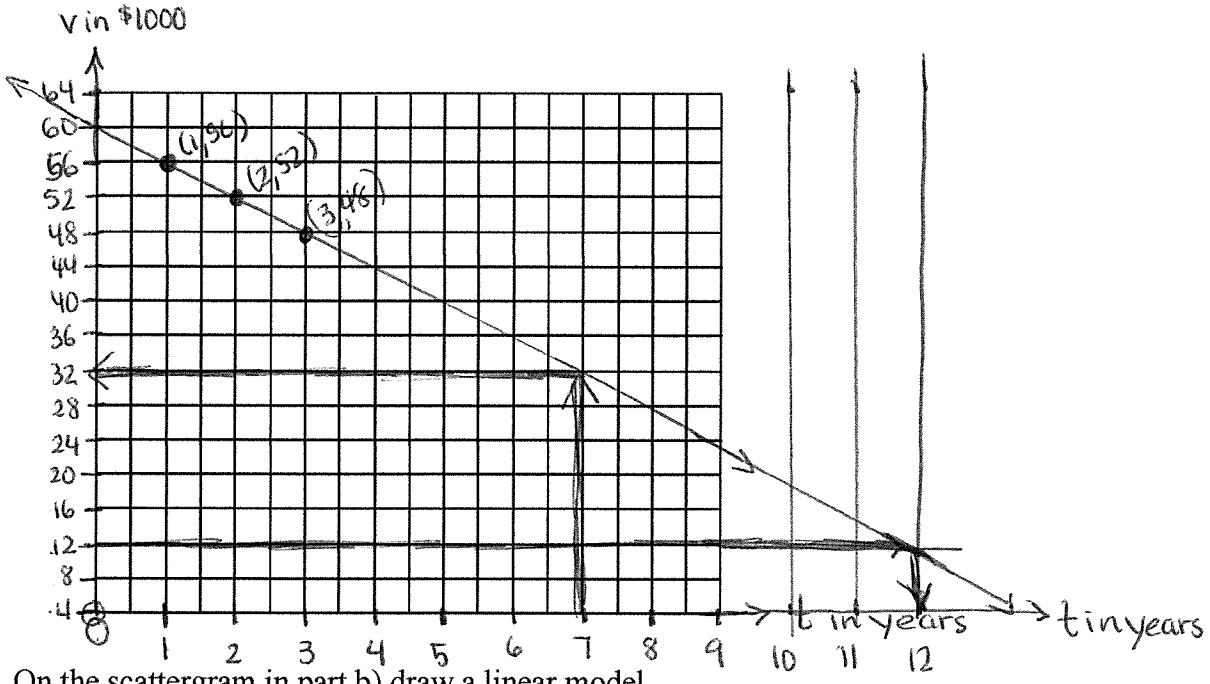
a) Complete the table below for this scenario. (Be careful.)

t (in years)	v (in $1000)
1	56
2	56-4 = 52
4	56-4-4 = 48
n	-4t + 60

60 = 56+4

This is a bonus question when I didn't give you t=0

b) Make a scattergram for the ordered pairs represented in the table in part a). Scale the dependent axis by 4's and the independent axis by 1's(use every 2nd one to make a better picture; skip a line in other words). Just represent the first quadrant.



c) On the scattergram in part b) draw a linear model.

See line above through 3 points

d) Predict value of the car after 7 years according to your linear model. Show your work with lines on the model. Give the answer here with correct units $32 thousand

e) Use your model to estimate how many years until the car will be worth $12 thousand. Give the answer here with correct units

12 years

f) What does the y-intercept mean for this model?

The cost of the car when it was bought (t=0 years)

10. On June 1, 1997, there were 200 webpages and the number of webpages was increasing by 6 every 5 weeks. Let p be the total number of webpages in w weeks since June 1, 1997.

a) Give the dependent variable (as a variable based on the story above).

p = total # of webpages

b) Give the independent variable (as a variable based on the story above).

w = weeks since 6/1/97

c) What is the baseline (start value)?

200 webpages

d) What is the rate of change? Use units. Leave as a fraction.

$\frac{6}{5}$ pages / weeks

e) Give the linear equation for this situation.

$p = \frac{6}{5}w + 200$

f) Give a t-table of 3 values for the model that you gave that satisfy the scenario.

w	p
0	200
5	206
10	212

use multiples of 5 for easy numbers.

11. Give the equation in slope-intercept form, of the line passing **through (0, -1)** that is **perpendicular** to **y = 5x + 1**.

$m_\perp = -\frac{1}{5}$ so $y = -\frac{1}{5}x - 1$

12. Any line **parallel** to the line $y = \frac{1}{3}x - 3$ will have the $\frac{1}{3}$ same slope, but a different (not -3) y-intercept.

13. Give the equation of a **horizontal line** through the point **(7, -1.2)**

$y = -1.2$

↳ y = what y-coordinate is

14. Give the equation of a **vertical line** through the point **($\frac{9}{2}$, 2)**

$x = \frac{9}{2}$

↳ x = what x-coordinate is

15. What is the slope the line through each of the following set of ordered pairs.
Show work or indicate how you know. Do not use a graph to show work.

a) (7, 9) & (-2, 9)

same y's means horizontal line where slope is zero

$m = 0$

or

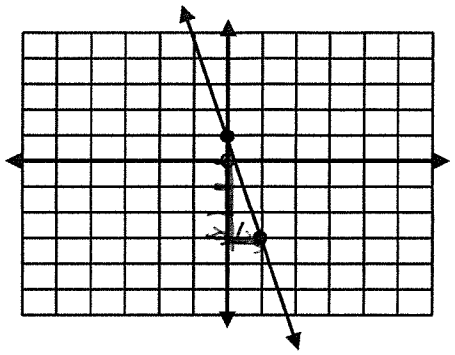
$m = \frac{9-9}{-2-7} = \frac{0}{-9} = 0$

b) (5,-9) and (-4, 9)

$m = \frac{9-(-9)}{-4-5} = \frac{18}{-9} = -2$

$m = -2$

16. Give the equation for the line shown in the graph, using the two points shown. The equation of the line must be given in *slope-intercept form* for full credit. Show work for the slope.



rise = −4

run = +1

$m = \frac{\text{rise}}{\text{run}} = \frac{-4}{1} = -4$

y-int = (0, 1)

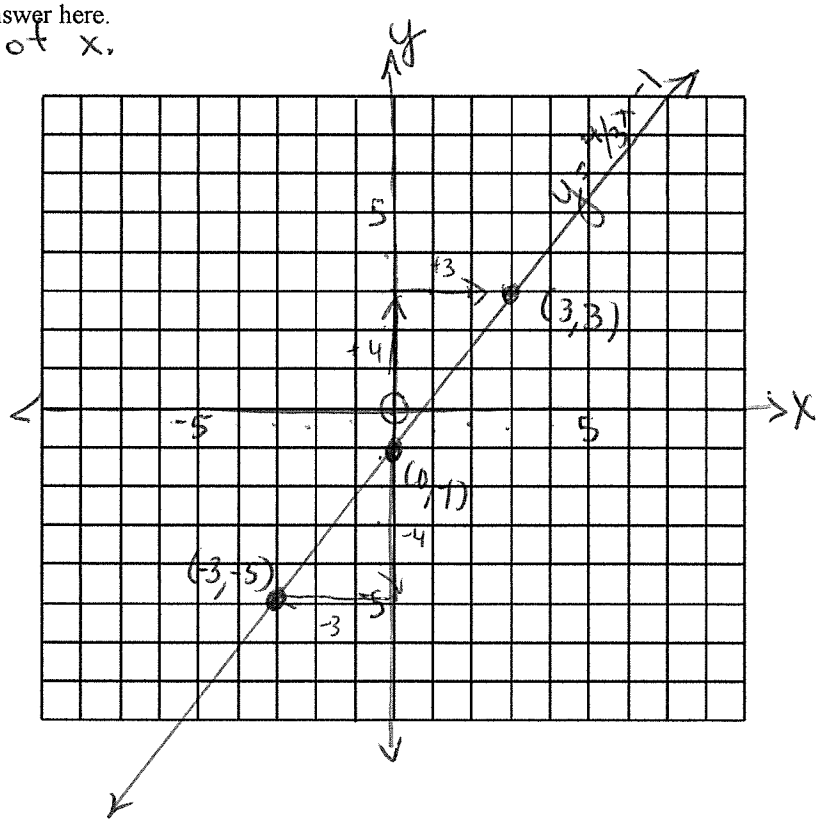
$y = -4x + 1$

17. For the equation: $y = \frac{4}{3}x - 1$

a) On the line provided, give the y-intercept as an ordered pair. (0, −1)
Constant's value.

b) On the line provided, give the slope. m = 4/3
Indicate how you arrived at this answer here.
Numeric coeff of x.

c) Graph the line here using
Use & label 3 points.
Label the line.



Check:

$3 \stackrel{?}{=} \frac{4}{3} \cdot 3 - 1$

$3 = 4 - 1$

$3 = 3$ ✓

$-5 \stackrel{?}{=} \frac{4}{3} \cdot -3 - 1$

$-5 = -4 - 1$

$-5 = -5$ ✓

Note: *The actual test might have a few multiple choice problems and fewer parts a), b), c) etc. for problems like the decimal operations.*