Name: Key

Test #2b – 1.3 thru Chapter 3.1
Beginning Algebra
Fall 2009

120

Instructions: *Put your name on your paper before you begin. You may* ***not use a calculator*** *on this test. All work must be shown in order to receive all points for all questions. If you use extra paper to show work, please tell me where to find additional work each time that you use it and label your work clearly so that I may easily find it! Please* ***box your final answer****. Any answer that is a fraction must be in lowest terms and as mixed number for full credit. Staple your note card to the back of your test. Good luck!*

1. Change each of the following integer <u>subtraction problems to addition</u>. Do not add or simplify in any way besides changing to addition.

+3

a) -45 – (-9) — **-45 + 9**

b) -2 – 6 — **-2 + -6**

c) 8 – (-7) — **8 + 7**

2. Use <, > or = to compare the following. Show all work to get one number to compare to another!

+3

a) -(-3) > -|-3|
3 ; -3

b) $(-7)^2$ > -7^2
-7·-7 = 49 ; -(7·7) = -49

3. For each of the following give the correct answer:

+3

a) 0 ÷ 54 — 0 · 1/54 — **zero**

b) -6,851 ÷ 0 — **undefined**

c) 710 • 0 — **zero**

4. Find the answers to the following fraction problems (using fractions) and then give the answers **<u>in lowest terms and/or as a mixed number</u>**.

+6½

a) $5959\,{}^{7}/_{10} + 2928\,{}^{11}/_{15}$

LCD = 2·3·5 = 30

$5959\frac{21}{30} + 2928\frac{22}{30} = 8887\frac{43}{30} = 8887 + 1\frac{13}{30} = \mathbf{8888\frac{13}{30}}$

$\frac{59597}{10} + \frac{43931}{15} = \frac{178791 + 87862}{30} = \frac{266653}{30} = 8888\frac{13}{30}$

b) $458\,{}^{11}/_{239} - 237\,{}^{17}/_{239}$

$457\frac{11}{239} + \frac{239}{239} = \frac{250}{239}$

$457\frac{250}{239} - 237\frac{17}{239} = \mathbf{220\frac{233}{239}}$

5. Evaluate using order of operations (show all work; each step in order of op.)

+5½

$$\frac{-3|9-24| \div 9 + 3}{15 \bullet 2 + 19 - (-3-4)^2} = \frac{-3|-15| \div 9 + 3}{30 + 19 - (-7)^2} = \frac{-3(15) \div 9 + 3}{30 + 19 - 49} = \frac{-5 + 3}{49 - 49} = \frac{-2}{0} = \textbf{undefined}$$

+21

6. Simplify the following expression. Don't solve. Show all work.

$3(5x - 2) - 4(x + 1)$

$= 15x - 6 - 4x - 4$

$= \boxed{11x - 10}$

+3

7. Show the exact translation to an polynomial subtraction problem (don't simplify while translating). After it is translated, then simplify.

Subtract $2.1x + 5$ from $4x - 2.1$

$(4x - 2.1) - (2.1x + 5) = 4x - 2.1 - 2.1x - 5$

$= \boxed{1.9x - 7.1}$

+4

8. Clear the following equation of fractions. Don't solve.

$\frac{1}{2}x + \frac{2}{5} = \frac{1}{3}(\frac{1}{6} - 6x)$

$90 \quad \frac{1}{2}x + \frac{2}{5} = \frac{1}{18} - 2x$

LCD $= 2 \cdot 3 \cdot 3 \cdot 5 = 90$

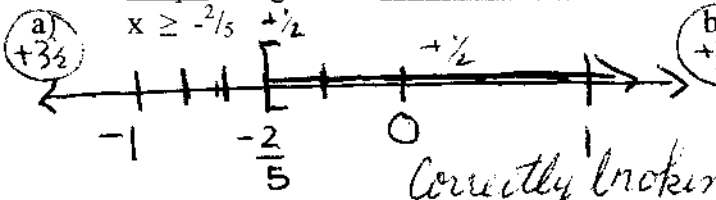
$\boxed{45x + 36 = 5 - 180x}$

Take 2 away for clearing before dist incorrectly

+3

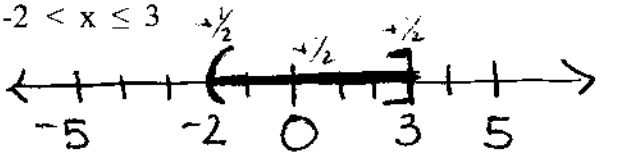
9. Graph and give the interval notation for following linear inequalities.

a) $x \geq -\frac{2}{5}$



$[-\frac{2}{5}, \infty)$ Correctly broken into 5ths

b) $-2 < x \leq 3$



$(-2, 3]$

+7

10. Solve the following.

a) $2(x - 5) - x = 3x - 2(x + 5)$

$2x - 10 - x = 3x - 2x - 10$

$x - 10 = x - 10$

$\boxed{IR}$

b) $3(x + 2) - 2 = x + 4(x + 1)$

$3x + 6 - 2 = x + 4x + 4$

$3x + 4 = 5x + 4$

$-3x \quad -3x$

$4 = 2x + 4$

$-4 \quad -4$

$\frac{1}{2} \cdot 0 = 2x \cdot \frac{1}{2}$

$\boxed{x = 0}$

+10

+27

11. For all the parts you must show setup, an equation that could be used to solve the problem (using algebra) and for one and only one you must solve (showing all the work) the equation that you created. Solve only one of the following parts. +4

a) +2 Jose is five years younger than Sean. The sum of their ages is 23. Find Jose's age.

Jose = Sean − 5 = x − 5 +½
Sean = x +½
Sum = Jose + Sean = 23
(x − 5) + x = 23 +1

Solved
Simp +½ 2x − 5 = 23
Add prop +1 +5 +5
Mult prop +1 ½ · 2x = 28 · ½
x = 14

Finish
Jose = ½
14 − 5
= 9 yrs old

b) +2 One number is 9 more than another number. If their sum is 25, find the larger number.

one = another + 9 = x + 9 +½
another = x +½
Sum = one + another = 25
(x + 9) + (x) = 25 +1

Solved
2x + 9 = 25
−9 −9
½ · 2x = 16 · ½
x = 8

Larger
= 8 + 9
= 17 is larger
#

+12

c) +2 A college graduating class is made up of 450 students. There are 206 fewer boys than girls. How many boys in the class?

Boys = girls − 206 = x − 206 +½
girls = x +½
Class = boys + girls = 450
(x − 206) + x = 450 +1

Solved
2x − 206 = 450
+206 = 206
½ · 2x = 656 · ½
x = 328

Boys = 328 − 206
= 122 boys

d) +2 A 22 foot pipe is cut into two pieces. The short piece is 8 feet shorter than the longer piece. What is the length of the short piece?

Short = long − 8 = x − 8 +½
long = x +½
sum = short + long = 22
(x − 8) + x = 22 +1

Solved
2x − 8 = 22
+8 8
½ · 2x = 30 · ½
x = 15

Short = 15 − 8
= 7 foot piece

12. Solve only one of the following problems. You must show setup, an equation/expression that you will use to solve (showing all the work) the problem.

a) A "Going-Out-Of-Business" sale advertised a 75% discount on all merchandise. Find the discount and sale price of an item originally priced at $130.

b) At the beginning of a chemistry experiment, the temperature was -5°C. What was the liquid's temperature at the end of the experiment if it fell 14°C?

c) A local restaurant reported net incomes of -$1397, -$2022 and $809 for the past three months. What was its average net income for the three months?

+3½

(a) Orig. = $130 Setup +1
75% off
Discount = 75% of 130 is discount
Sale = Orig. − Discount
= 130 − ¾ · 130 Expression +1
= 130 − 97.5
= $32.50 is sale price
Solution +1
Units +½

(b) Beg. Temp = −5°C
Fell = 14°C
End = Beg − Fell
−5 − 14
= −5 + −14
= −19°C is end temp.

(c) 1st = −$1397
2nd = −$2022
3rd = $809
Ave Net $ = (1st + 2nd + 3rd) / 3
−(1397 + 2022) + 809 / 3 = −2610 / 3
= −$870
Net Inc. ave.

+15½

13. Label the Rectangular Coordinate System with the following elements:

+1 a) origin (use the correct ordered pair) +½ +½

+2 b) four quadrants

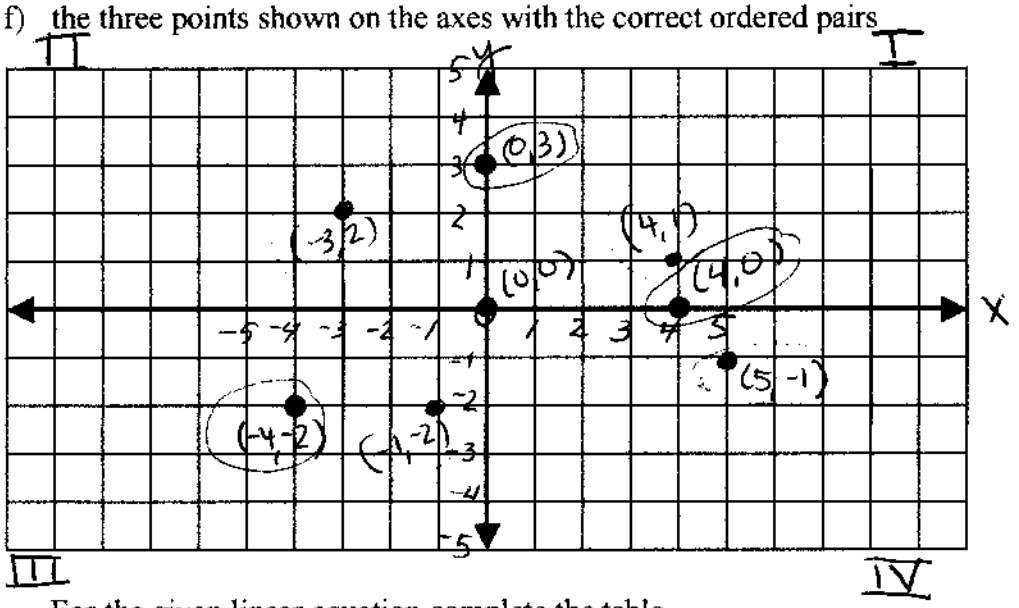
+1 c) the x & y axes

+2 d) up to positive **and** negative 5 (by ones) on **both** axes (assume each line is 1 unit)

+2 e) the following ordered pairs: (5,-1) ; (-3,2) ; (4,1) ; (-1,-2)

+1½ f) the three points shown on the axes with the correct ordered pairs

+9½



14. For the given linear equation complete the table.

$$2x + 4y = 8$$

+3

x	y
-8	6 +1
4 +1	0
0	2 +1

Substitute, solve +1 each

$2(-8) + 4y = 8 \Rightarrow \frac{1}{4}\cdot 4y = 24\cdot\frac{1}{4} \Rightarrow y = 6$ (+16, +16)

$2x + 4(0) = 8 \Rightarrow \frac{1}{2}2x = 8\cdot\frac{1}{2} \Rightarrow x = 4$

$2(0) + 4y = 8 \Rightarrow \frac{1}{4}\cdot 4y = 8\cdot\frac{1}{4} \Rightarrow y = 2$

Each of the following problems are multiple choice. They are all worth 4 points. If you show no work, they are either correct or incorrect. You may circle only one answer or you will not receive any credit at all. If you show work, partial credit will be assigned even if you do not circle an answer (maybe you don't think the correct answer is there) or your circled answer is incorrect.

+4

15. Subtract: $1\frac{3}{5} - 2\frac{2}{3}$ Some work shown at least +½ (Circle the best answer. Circle only one.)

$\frac{3}{15} - \frac{10}{15} = \frac{-7}{15}$

a)	b)	c)	d)
$-\frac{7}{15}$	$-\frac{1}{2}$	$-\frac{1}{15}$	$\frac{7}{15}$
	Subtracted num+denom. Work shown +½	Forgot to build higher +1 if work shown	Just missed sign +3 if work shown

+4

16. Simplify: $-2 - 5 + 10$ (Circle the best answer. Circle only one.)

$-2+-5+10 = -7+10 = 3$

a)	b)	c)	d)
13	-13	3	-17
Added 10+5 & subtracted 2 +½ if work shown	Added 10&5 Subt. 2 but wrong sign +½ if work shown		Add 10&5 Subt. -2-15 +1 if work shown

+20½

4x5 = 20 −·+=−

17. Multiply: $(-0.4)(0.5)$ (Circle the best answer. Circle only one.)

a) 0.2 **b) -0.2** c) 0.02 d) -0.02

18. Divide and simplify: $1/6 \div (-2/3)$ (Circle the best answer. Circle only one.)

a) $-1/4$ b) $1/4$ c) -4 d) -1

$\frac{1}{6} \cdot -\frac{3}{2} = \frac{-1}{4}$

19. Subtract: $-6 - (-3)$ $-6+3 = -(6-3)$ (Circle the best answer. Circle only one.)

a) -3 b) 3 c) -9 d) 9

20. Simplify: $6 - |-4| - 2$ $6-4-2 = 2-2$ (Circle the best answer. Circle only one.)

a) 8 **b) 0** c) 12 d) -4

21. Simplify: $\frac{30 + 3 \cdot 2}{10 + 3} = \frac{30+6}{13} = \frac{36}{13} = 2\frac{10}{13}$ (Circle the best answer. Circle only one.)

a) $5\,1/13$ b) $2\,1/2$ **c) $2\,10/13$** d) 5

23. Solve: $\frac{9}{4} \cdot 4/9\,x = \frac{9}{4} \cdot \frac{9}{4}$ $x = 81$ (Circle the best answer. Circle only one.)

a) $x = 35\,5/9$ b) $x = 16$ c) $x = 9$ **d) $x = 81$**

24. Solve: $\frac{1}{7} \cdot 7x = -1/4 \cdot \frac{1}{7}$ $-1/28$ (Circle the best answer. Circle only one.)

a) $x = -1/28$ b) $x = 1/28$ c) $x = -1\,3/4$ d) $x = -28$

25. Solve: $16x = 19x - 6\frac{1}{3}$ $-3x = -6\frac{1}{3}$ (Circle the best answer. Circle only one.) $x = 2$

a) $x = 1$ **b) $x = 2$** c) $x = -1$ d) $x = -2$

25. Solve for **b**: $x = 3a + 2b + c$ (Circle the best answer. Circle only one.)

a) $b = \frac{x}{3a + c - 2}$ **b) $b = \frac{x - 3a - c}{2}$**

c) $b = x - 3ac - 2$ d) $b = x - 3a - c - 2$

+20