Name: Key

Test #2a – Chapter 1
Beginning Algebra
Fall 2008

55.5

Instructions: *Put your name on your paper before you begin. You may not use a calculator on this test, and all work must be shown in order to get all points for all questions. If you feel that you must use a piece of scratch paper, please tell me that you have used scratch paper each time that you use it and label your work clearly so that I may easily find it! Please box your final answer and don't forget that word problems require labels for their answers. Staple your note card to the back of your test. Good luck!*

1. From the following word problems choose one and showing setup, and an equation that you use, **solve** the problem. Algebra must be used for full credit.
   a) If sales tax is 8%, what will be the total cost of a shirt that costs $24?
   b) The sum of three consecutive integers in 66. Find the integers.

+3½

(a)

Shirt = $24
Tax % = 8%
Tax = %(Shirt)
Total = Shirt + Tax = x } setup +1

$x = (0.08)(24) + 24$ ← +1

$x = 1.92 + 24 = \boxed{\$25.92}$ +½

(b)

Setup +1:
1st = x
2nd = x + 1
3rd = x + 2
sum = 1st + 2nd + 3rd = 66

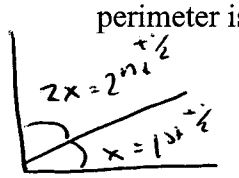
$x + x + 1 + x + 2 = 66$ ← +1
$3x + 3 = 66$
$3x = 63$
$x = 21$ } Solve +1

+½ { 21, 22, 23

2. From the following word problems choose one and showing setup, and an equation that you use, **solve** the problem. Algebra must be used for full credit.
   a) Two angles are complementary if their sum is 90°. Find the angles of two complementary angles if the second angle is twice the first.
   b) The length of a rectangle is 4 feet less than 3 times the width. If the perimeter is 16 feet find the length.

+4

(a)



$1^{st} + 2^{nd} = 90$
$x + 2x = 90$ +1
$3x = 90$
$x = 30$ } +1

$\boxed{1^{st} = 30°,\ 2^{nd} = 60°}$ +½ +½

(b)

length = 3width − 4 = 3x − 4 +½

$\boxed{P = 2l + 2w = 16ft}$ width = x +½

$2(3x - 4) + 2x = 16$ +1
$6x - 8 + 2x = 16$
$8x - 8 = 16$
$8x = 24$
$x = 3$ } +1

+½ width is 3ft
+½ length is 5ft +½

1-9 +7½

3. From the following word problems choose two, showing setup, and an equation that could be used to solve the problem. **Do not solve.** Algebra must be used for full credit.

a) A lab has a 20% acid solution and a 50% acid solution. How many liters of each are required to obtain 600 liters of a 30% acid solution?

b) Julie invested $24,000 in two funds. The first, a bond, paid 5% simple annual interest and the 2nd, a money market, paid 3% simple annual interest. She earned a total of $1120 in interest in one year. How much did she invest at each rate?

+3

(a)

	V	%	Pure
weak	x	20%	0.2x
strong	600-x	50%	0.5(600-x)
mix	600	30%	0.3(600)

+1 $0.2x + 0.5(600-x) = 180$ (+½ each) Decimals +½

(b)

	P	R	T	I
bond	x	5%	1	0.05x
money market	24000-x	3%	1	0.03(24000-x)
Total	24,000	X	X	1120

+1 $0.05x + 0.03(24000-x) = 1120$ (+½ each) Decimals +½

4. Solve for **y**.
Your final answer needs to have 2 terms.

+1½

$2x + 5y = C$

$-2x \quad -2x$ (+½)

$\frac{5y}{5} = \frac{C}{5} - \frac{2x}{5}$

$y = \frac{C}{5} - \frac{2x}{5}$ (+½ each)

5. Solve each of the following equations.

a) +2½ $2(x - 9) = 3x - 18 - x$

$2x - 18 = 2x - 18$ (+½ each)

IR +1

b) +3 $7x + 3 = 6(x + 3) + x + 3$

$7x + 3 = 6x + 18 + x + 3$

$7x + 3 = 7x + 21$

Ø +1

+11

c) +1 $7x = 6x$

$-6x = -6x$ (+½)

$x = 0$ (+½)

d) +4½ $7x - 3(x + 4) = 8x + 4$

$7x - 3x - 12 = 8x + 4$ (+½ each)

$4x - 12 = 8x + 4$

$-4x \quad -4x$ (+½)

$-12 = 4x + 4$

$-4 \quad -4$ (+½)

$\frac{-16}{4} = \frac{4x}{4}$ (+½)

$x = -4$ (+½)

2-9 +15½

Mult. both twice -1

6. Clear each problem of decimals or fractions. You need not solve. You should only need one step to clear, not 2! If it took 2 passes, you might want to try it again.

a) $\frac{1}{5}(x - \frac{2}{3}) + \frac{1}{2} = \frac{1}{10}x - \frac{1}{3}$

LCD = 2·5·3 = 30 +1

$\frac{30}{1}\cdot\frac{1}{5}x - \frac{30}{1}\cdot\frac{2}{15} + \frac{30}{1}\cdot\frac{1}{2} = \frac{30}{1}\cdot\frac{1}{10}x - \frac{30}{1}\cdot\frac{1}{3}$

$6x - 4 + 15 = 3x - 10$ +1

b) $0.2(0.1x + 4) - 3 = 0.15x + 0.5$

LCD = 100 +1

$0.02x + 0.8 - 3 = 0.15x + 0.5$

$2x + 80 - 300 = 15x + 50$ +1

+4

7. Simplify completely.

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

$\frac{2}{3}x - \frac{2}{15} + \frac{1}{2}$

$-\frac{4}{30} + \frac{15}{30} = \frac{11}{30}$

$\frac{2}{3}x + \frac{11}{30}$ +1

+6½

b) $6(x - 4) - 3(x - 1) + 9$

$= 6x - 24 - 3x + 3 + 9$ −21 + 9

$= 3x - 12$ +1

No Clearing

Take 1 off for solving

+5

8. Translate the following into an equation. Check to see that x = 25 is the solution. Twice the sum of a number and 2 is equal to three times the difference of the number and 7.

Let x = # order +½

$2(x+2) = 3(x-7)$

$2[25+2] = 3[25-7]$

$2(27) = 3(18)$

$54 = 54$ ✓ } Check +1

No points off for solving

½ for not true & no comment.

+7

9. Simplify using order of operations. Show all intermediate steps. You must simplify both the numerator and denominator regardless of the final answer.

a) $\frac{\frac{2}{3}(-3 + 3)}{4 \div 2 + (10 - 13)} = \frac{\frac{2}{3}(0)}{2 + -3} = \frac{0}{-1} = 0$ +1

Must do dist prop correctly for pts, else -1 shouldn't dist.

b) $\frac{24 \div 6 \cdot 2 + 2}{9^2 - 81}$

$= \frac{4 \cdot 2 + 2}{81 - 81} = \frac{8 + 2}{0} = \frac{10}{0}$

= undefined +1

+5

10. Compare using the symbols <, > or =. (Showing work is necessary. You must simplify to get to 2 numbers that you can compare.)

a) $-(-3)$ (>) $-|-3|$

3 -3

b) $(-5)^2$ (>) -5^2

$-5 \cdot -5$ $-(5 \cdot 5)$

25 -25

c) $\frac{51}{61}$ (>) $\frac{19}{23}$ (1173 / 1159)

d) $-\frac{3}{4}$ (<) $-\frac{1}{2}$

e) -507 (>) -913

e) 0.5934 (>) 0.593

3 − 9 +32½