PRE-ALGEBRA COMPETENCY EXAM

Part I : Computation and Number Sense, No Calculators, 40 minutes

Name (please print):_____Date:_____

Please clearly show each step of your work in the space provided.

1) Add, subtract, multiply or divide as directed:

a. 3287 - 1,481

b. 726 × 31

c. 234 ÷ 13

1) a. _____

b. _____

c. _____

2) Simplify the following fractions:

a. $\frac{9}{15}$

b. $\frac{36}{28}$

2) a. _____

b. _____

3) Find the LEAST COMMON MULTIPLE of the numbers:

a. 8 and 24

b. 12 and 16

3) a. _____

b. _____

4) Add, subtract, multiply or divide as directed:

a. $6.236 + 321.29$

b. $16.37 - 12.543$

c. 5.7×3.06

d. $5.61 \div 0.03$

4) a. _____

b. _____

c. _____

d. _____

5) Find the GREATEST COMMON FACTOR of the numbers:

a. 12 and 18

b. 17 and 51

c. 56 and 36

5) a. _____

b. _____

c. _____

6) Write $6\frac{1}{4}$ as an improper fraction.

6) _____

7) Write $\frac{45}{7}$ as a mixed number.

7) _____

8) Write the PRIME FACTORIZATION of the number. If a number cannot be factored, write "prime" in the answer blank.

a. 49

b. 68

c. 380

d. 61

8) a. _____

b. _____

c. _____

d. _____

9) Write the decimal as a fraction in simplest form.

a. 0.85

b. 0.2

9) a. _____

b. _____

10) Write the number in scientific notation.

a. 6,540,000

b. 0.00047

10) a. _____

b. _____

11) Write the number in decimal form:

a. 5.9×10^{-2}

b. 4.78×10^{5}

11) a. _____

b. _____

12) Add or subtract as directed. Write the answer as a fraction or a mixed number in lowest terms.

a. $\frac{3}{11} - \frac{7}{11}$

b. $\frac{5}{4} + \frac{2}{5}$

c. $7\frac{4}{10} - 2\frac{1}{5}$

12) a. _____

b. _____

c. _____

13) Compare the two numbers using <, >, or =.

a. $\frac{4}{15}$ and $\frac{2}{7}$

b. .00059 and .0017

c. -12.35 and -15.12

d. $\frac{5}{9}$ and 0.58

13) a. _____

b. _____

c. _____

d. _____

14) Multiply or divide as directed. Write the answer as a fraction or a mixed number in lowest terms.

a. $\frac{3}{13} \times \frac{4}{5}$

b. $\frac{4}{9} \div \frac{3}{8}$

c. $5\frac{2}{5} \div 8$

14) a. _____

b. _____

c. _____

15) Use the correct order of operations to evaluate the following expressions:

a. $6 \div 3 \times 2 - 2$

b. $(7 - 2)^2 - 10 \div 5$

c. $[(8-3) \times 6\ ] \div |3 - 6|$

15) a. _____

b. _____

c. _____

16) Add or subtract as directed:

a. $-8 - 14 + 19$

b. $26 - 9 - (-6)$

c. $-7 + (-18)$

16) a. _____

b. _____

c. _____

17) Compare the two numbers using >, < or = .statement.

a. 0.65 and 65%

b. 320% and 9

17) a. _____

b. _____

18) Multiply or divide as directed:

a. $(-5)(-3)(-3)(-2)$

b. $\dfrac{-75 \cdot -3}{-5}$

c. $\dfrac{-120}{20 \cdot (-3)}$

18) a. _____

b. _____

c. _____

19) Express 0.265 as a percent.

19) _____

20) Write the fraction as a percent: $\dfrac{14}{25}$

20) _____

21) Simplify:

a. 6^2

b. $-(-6)^2$

c. -6^2

d. $(-6)^2$

21) a. _____

b. _____

c. _____

d. _____

22) Write as a single quantity using exponents: $12^8 \cdot 12^{15}$

22) _____

23) Arrange the following in increasing order:

$\frac{4}{5}$, $\frac{3}{4}$, -0.78, and $-\frac{7}{9}$.

23) _____

24) Simplify:

a. $-|-14|$

b. $|-12|$

c. $17-|2|$

24) a. _____

b. _____

c. _____

25) Evaluate:

a. $\sqrt{81}$

b. $\sqrt{196}$

25) a. _____

b. _____

PRE-ALGEBRA COMPETENCY EXAM

Part II: Pre-Algebra Skills, No Calculators, 40 minutes

Name (please print):_____Date:_____

Please clearly show each step of your work in the space provided.

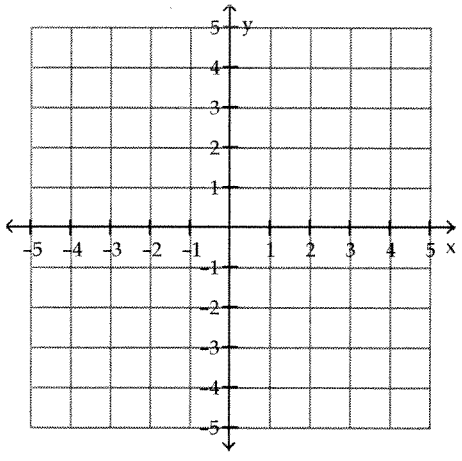
1) If 9 pounds of jelly beans cost $6.30, how much will 5 pounds of jelly beans cost? 1) _____

2) Solve the following inequalities: 2) a. _____

a. $3x - 8 \geq 6x - 14$ b. _____

b. $-5x < 35$

3) Plot and label the coordinate points with the correct letter on the graph: 3)

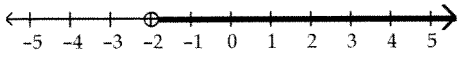


Point A (3, -1)

Point B (0, 5)

Point C (-2, 0)

4) Write the inequality represented by the graph: 4) _____



5) A right triangle has a base of 9 and a height of 12. 5) a. _____

a. Find the area of the triangle.

b. _____

b. Find the length of the hypotenuse.

6) Use the formula $A = \frac{s^2 - 4}{4}$ to find the area when $s = 4$. 6) _____

7) A simple game of chance is constructed so that a colored chip is to be randomly drawn from a bag containing 12 red chips, 8 blue chips, 4 yellow chips, and 6 green chips. What is the probability of drawing a chip that is yellow? 7) _____

8) If $a = 4$, $b = 2$ and $c = -8$, what is $b - (3a + c)$? 8) _____

9) Carlos has $250 to spend. He bought an X-Box for $190.00. How many games can he buy if each game costs $7.00?

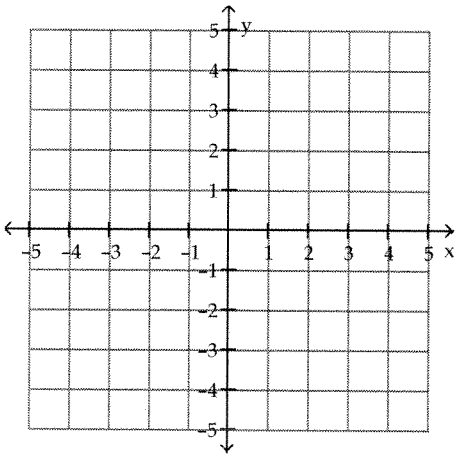
9) _____

10) Jesse is building a dog pen for her puppy. She makes a scale drawing on a coordinate plane with each unit representing 1 foot. Points A(1, 5), B(–2, 5), C(–2, –1) and D(1, –1) represent the corners of the pen.

10) a. _____

b. _____

c. _____



a. How many feet of fencing will Jesse need to buy?

b. If fencing costs $9.50 per foot, what will this project cost Jesse?

c. What is the total area of the pen?

11) The regular price of a car is $37,000. The car is on sale for 5% off. What is the new price of the car?

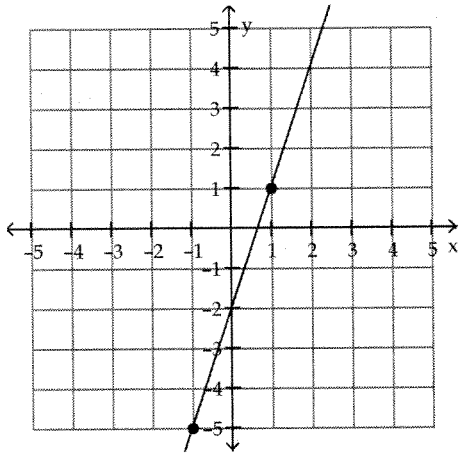
11) _____

12) Simplify: $9.8m - 4(2.3 - m) + 3.6$

12) _____

13) What is the slope of the line through the points (–2, –7) and (6, –5)? 13) _____

14) Write the equation represented by the graph: 14) _____



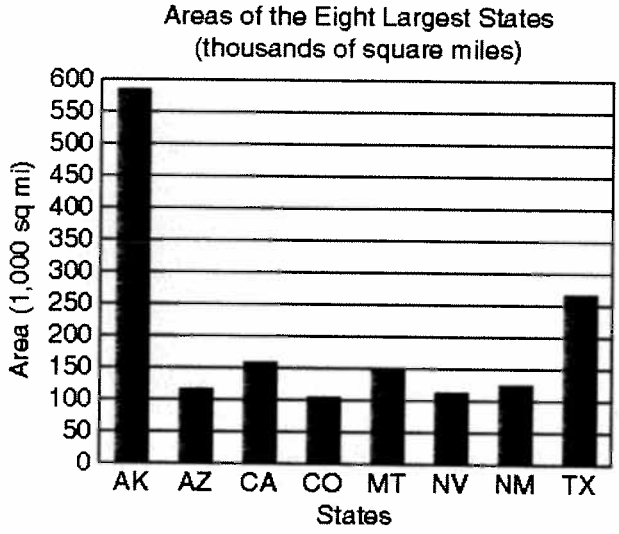
15) Is (2, –3) a solution to the equation $3x - 4y = 18$? Show all work in the space below for full credit. 15) _____

16) In one 24–hour period, the high temperature was 22° and the low temperature was –16°. How much did the temperature change in that 24–hour period? 16) _____

17) Solve for x: $\frac{x}{3} = \frac{9}{11}$ 17) _____

18) John read three-fourths of a book and is now on page 90. How many pages are in the book altogether? 18) _____

19) Use the graph. Which state has an area that is closest to Colorado (CO)? 19)



20) Combine the like terms to simplify:

a. $3d + 4s - 8s + 6d$ 20) a. _____

b. $4x + 2y - 3xy - 4y$ b. _____

21) Solve the following equations:

a. $8x + 4 = 36$ 21) a. _____

b. $\frac{3}{8}x = 6$ b. _____

c. $6(x+2) + 5 = 3x - 1$ c. _____

22) List the next two numbers for each sequence:

a. 2, 4, 8, 16.....

b. 28, 21, 15, 10.....

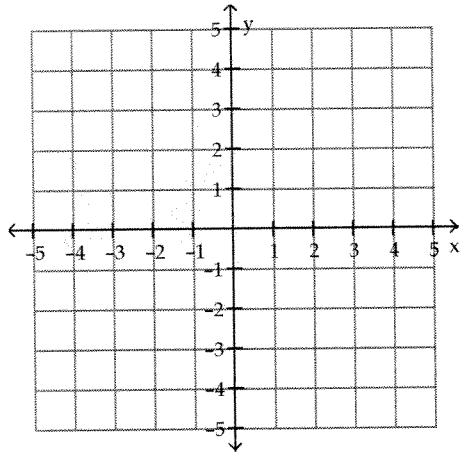
c. 10, 2, 13, 6, 16,10.....

22) a. _____

b. _____

c. _____

23) Graph the line: $y = \frac{2}{3}x - 1$



23)

24) Simplify:

a. $\frac{x^{19}}{x^8}$

b. $x^{10} \cdot x^2$

c. $(x^3)^{12}$

24) a. _____

b. _____

c. _____

25) Solve the following equations:

a. $2n + 3n - 9 = 21$

b. $7x = 2(5x - 12)$

c. $4a + 15 = -\frac{2}{5}a$

25) a. _____

b. _____

c. _____