Muscle Shoals Middle School
Algebra I
November 3, 2012

1. A toy maker has $6\frac{1}{4}$ yards of fabric. He wants to make five stuffed animals that each require $\frac{7}{8}$ yard of fabric. How many yards of fabric will he have left?

a. $1\frac{1}{2}$ yd b. $1\frac{3}{8}$ yd c. $1\frac{3}{4}$ yd d. $1\frac{5}{8}$ yd

2. There are 45 students in a college computer science course. If $\frac{1}{9}$ of them are over the age of 30 and $\frac{3}{5}$ of the remaining are under 25, how many students are from 25 to 30 years old?

a. 16 b. 5 c. 40 d. 27

3. During the last 10 years, the population of a town increased from 6000 to 10,320. What percent increase does this represent?

a. 80% b. 72% c. 75% d. 78%

4. Solve $|c - 5| = 7$.

a. {Ø} b. {–4, 4} c. {–4, 6} d. {–2, 12}

5. Determine which of the following relations is a function.

a. {(–4, 3), (–2, –2), (0, 2), (0, 5)}
b. {(–3, 1), (–3, –3), (–2, –1), (0, 5)}
c. {(–4, –1), (–2, –1), (–1, –1), (3, 3)}
d. {(2, –5), (–1, –1), (0, 4), (2, –3)}

6. Factor $196w^2 - 81z^2$

a. $(14w + 9z)(14w + 9z)$
b. $(14w - 9z)(14w - 9z)$
c. $(14w + 9z)(14w - 9z)$
d. prime

7. Which binomial is a factor of $6x^2 + x - 12$?

a. $(3x - 4)$ b. $(2x + 6)$ c. $(3x + 4)$ d. $(2x - 3)$

8. Jeff owns a delivery service. He charges his customers $15.00 for each delivery. His expenses include $7000 for the motorcycle he drives and $0.42 for gasoline per trip. Which equation could Jeff use to calculate his profit *p* for *d* deliveries?

a. $p = 15 - 0.42d$
b. $p = 7000 + 15d$
c. $p = 14.85d - 7000$
d. $p = 0.42d + 7000$

9. A bag contains 5 red marbles, 4 blue marbles, and 8 green marbles. Three marbles are randomly drawn from the bag and not replaced. Find *P*(red, green, *not* blue).

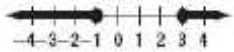
a. $\frac{440}{4913}$ b. $\frac{11}{102}$ c. $\frac{779}{510}$ d. $\frac{2}{17}$

10. If $x^3 - 7x^2 - 30x = 0$, find the product of the roots.

a. -30 b. 30 c. 7 d. -7

11. If y varies inversely as x and $y = -9$ when $x = -11$, find y when $x = 66$.

a. 3 b. 6 c. 11 d. $\frac{3}{2}$

12. Which compound inequality has the solution set shown in the graph? 

a. $x < -1$ or $x > 3$ b. $x > -1$ or $x < 3$ c. $x > -1$ or $x \geq 3$ d. $x \leq -1$ or $x \geq 3$

13. Find the sum of the coordinates of the ordered pair which satisfy the system

$$5x - 2y - 3 = 0$$
$$4x - 5y + 1 = 0$$

a. 1 b. -1 c. 2 d. -2

14. A trapezoid has an area of 117 square feet and a height of 3 yards. One base is four feet shorter than the other base. How long is the longer base?

a. 15 ft. b. 13 ft. c. 11 ft. d. 9 ft.

15. What is the standard form of the equation of the line through (6, –3) with a slope of $\frac{2}{3}$?

a. $-2x + 3y = 24$ b. $2x - 3y = 21$ c. $3x - 2y = 24$ d. $3x - 2y = -21$

16. Which property of equality is illustrated below?
If 7 + 9 = 11 + 5 and 11 + 5 = 16, then 7 + 9 = 16.

a. Transitive b. Reflexive c. Substitution d. Symmetric

17. On a trip of 525 miles, how many minutes faster is it to travel at 60 miles per hour rather than 50 miles per hour?

a. 95 min b. 85 min c. 115 min d. 105 min

18. Solve $8(x-5) = 12(4x-1) + 12$.

a. $-\frac{7}{10}$ b. $-\frac{5}{7}$ c. –2 d. –1

19. How many different three-letter codes can be formed from the set of letters (a, b, c, d, e, f, g, h, i) if each letter may be used only once and the last letter in the code must be a vowel?

a. 168 b. 112 c. 216 d. 42

20. If the product of two consecutive negative integers is equal to 5 more than the sum of the integers, then the lesser integer is ___?

a. 4 b. 1 c. −2 d. 3

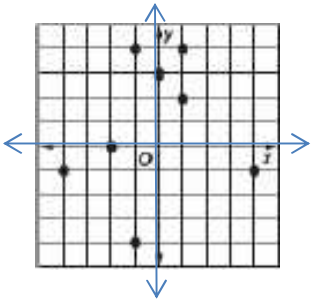
21. Tran has no more than 6 quarters, 14 dimes, 4 nickels, and 30 pennies in her bank. If she has half as many quarters as dimes, three times as many pennies as quarters, and one third as many nickels as pennies, what is the greatest amount of money she could have in her bank?

a. $2.38 b. $2.52 c. $2.12 d. $3.18

22. $\frac{\left(\sqrt[4]{x^2}\right)^{\sqrt{4}}}{\sqrt[4]{x^2}}$

a. $x^{-\frac{5}{4}}$ b. $x^{\frac{3}{4}}$ c. $x^{-\frac{3}{4}}$ d. $x^{\frac{1}{2}}$

23. Use the graph below to answer the question. What is the domain of the relation?



a. {–4, –2, –1, 0, 1, 2, 3, 4}
b. {–4, –1, 0, 2, 3, 4}
c. {–4, –2, –1, 0, 1, 4}
d. {–4, 4}

24. Find $\frac{y^2+8y+16}{y} \cdot \frac{4y}{y^2-16}$.

a. $\frac{-4}{y-4}$ b. $\frac{4}{y+4}$ c. $\frac{4(y+4)}{y-4}$ d. $\frac{64(y+4)^2}{y^2}$

25. What is the *3 by 3* identity matrix?

a. $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$ b. $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ c. $\begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 0 \\ 1 & 0 & 0 \end{bmatrix}$ d. $\begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$

Tiebreaker 1: Simplify: $\sqrt{128} - \sqrt{98} + \sqrt{\sqrt{64}}$

Tiebreaker 2: What is the distance between (6, -4) and (0, –12)?

Tiebreaker 3: $\begin{bmatrix} 5 & 1 & 8 \\ 13 & 1 & 5 \\ 1 & 7 & 14 \end{bmatrix} + \begin{bmatrix} 8 & 12 & 5 \\ 0 & 12 & 8 \\ 12 & 6 & -1 \end{bmatrix} =$