Name: _____Date: _____ Class: _____

Quarter 4 Midterm Study Guide

Transformations

For each of the following statements, decide whether it is true sometimes (S), always (A), or never (N). Put the correct letter on the answer sheet.

1. A rotation changes the direction a shape is facing.
2. A reflection creates a mirror image of an object.
3. Rotations create congruent figures.
4. Reflecting a figure changes its size.
5. Dilations create congruent figures.

Numbers

6. Which expression is equivalent to 2^5+3^4?
**Hint: What is 2^5? What is 3^4? Add them up!*

7. Write an equivalent expression to $\frac{b^6}{b^2}$
**Hint: What would happen if you expanded and then cancelled out?*

8. Simplify - $\sqrt{25}$
**Hint: Think of this as -1 times the square root of 25.*

9. Solve $x^2=25$
**Hint: What would x have to be to make this true?*

10. Is $\sqrt{2}$ rational or irrational? Why?
**Hint: Can you write it as a fraction?*

11. What is the quotient?
$(8\times10^5)\div(2\times10^2)$
**Hint: Divide the first two numbers (8/2) and then use your exponent rules for the rest ($10^5/10^2$)*

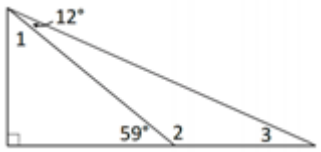
Equations

12. What value of x makes the equation true?
$\frac{1}{2}x+9=3$
**Hint: Remember to divide by a fraction, you multiply by the reciprocal.*

13. How many solutions does this equation have?
$\frac{g}{2}-6=4$
**Hint: It will help if you read this problem as "g divided by 2". Think about the inverse of dividing…*

Angles

14. What is the measure of angle 2?

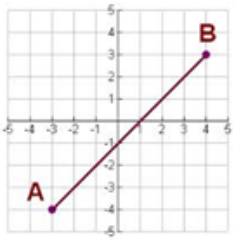


15. The angle measures of a triangle are 2x+5 degrees, 6x-5 degrees, and 7x degrees. What is the value of x?
**Hint: Set up an equation using the rule that the interior angles of any triangle have a sum of 180°*

Pythagorean Theorem

16. Could the lengths 6, 8, and 9 form a right triangle?
**Hint: Use the converse of the Pythagorean Theorem. If $a^2+b^2=c^2$, then it is a right triangle. Plug it in and see.*

17. What is the exact distance between A and B?
**Hint: Use the Pythagorean Theorem to find distance.*



Linear Equations

18. Barbara makes money after school as a tutor for math. She makes $12 per hour. Write an expression for the total money made for working h hours.

19. Aisha and Gabriel both sew to earn extra money, and each charges an hourly rate for a job. The equation $y = 17.50x$ shows the total charge, y, in dollars for Aisha to do a sewing job. The table below shows the same information for Gabriel.

x	2	4	6	8
y	34	68	102	136

Who makes more per hour?

**Hint: Compare the rates of change (slope).*

Systems of Equations

20. Cambra plans to join a CD club and is trying to decide between two different offers. CD Palace charges no membership fee and sells CDs for $12 each. Music World has a $40 club card that allows members to buy CDs for $9 each. Which system of linear equations represents the two offers?

A. $y = x + 12$
$y = x + 40$

C. $y = 40x$
$y = 12x \times 9$

B. $y = 12x$
$y = 9x + 40$

D. $y = 12x$
$y = 9x + 40x$

21. Solve the system in question 20.