Name: ___________________________________

Final Exam Review – End of Unit 7

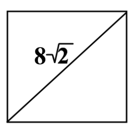
Unit 7: Quadrilaterals

For Questions 1-9, Circle all capitalized terms that apply:

1. Consecutive angles of a rectangle are always CONGRUENT, COMPLEMENTARY and/or SUPPLEMENTARY.
2. The diagonals of a rectangle always are CONGRUENT, PERPENDICULAR, PARALLEL, BISECT EACH OTHER and/or BISECT THE VERTEX ANGLES.
3. The opposite sides of a rectangle are always CONGRUENT, PERPENDICULAR, and/or PARALLEL.
4. The consecutive sides of a rectangle are always CONGRUENT, PERPENDICULAR, and/or PARALLEL.
5. A rectangle will always have exactly ZERO pairs, ONE pair or TWO pairs of parallel sides.
6. A rectangle will always have exactly ZERO pairs, ONE pair or TWO pairs of congruent sides.
7. If a quadrilateral has no pairs of parallel sides, then it could be a KITE, TRAPEZOID, PARALLELOGRAM, RECTANGLE, and/or a RHOMBUS.
8. If a quadrilateral has exactly one pair of parallel sides, then it could be a KITE, TRAPEZOID, PARALLELOGRAM, RECTANGLE, and/or a RHOMBUS.
9. If a quadrilateral has exactly two pairs of parallel sides, then it could be a KITE, TRAPEZOID, PARALLELOGRAM, RECTANGLE, and/or a RHOMBUS.

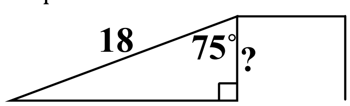
Unit 6: Right Triangle Trigonometry

10. The figure shown is a square. What is the area of the square?

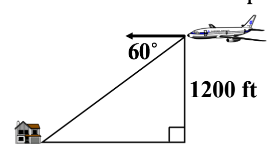


a. 32 square units
b. $32\sqrt{2}$ square units
c. 64 square units
d. 256 square units

11. In the diagram shown, a 18-foot ramp is attached to a platform. The ramp makes a 75˚ with the platform. What is the height of the platform?

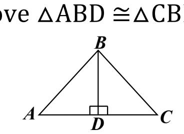


12. Clayton is flying an airplane at an altitude of 1200 ft. She sees her house on the ground at a 60˚ angle of depression. What is Joanna's horizontal distance from her house at this point?



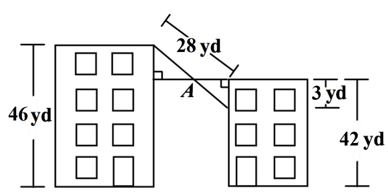
Unit 5: Similar Triangles

13. In the figure shown, △ABD and △CBD are isosceles triangles with a congruent vertex angle at *D*. Which theorem could be used to prove △ABD ≅△CBD?

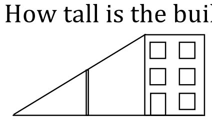


a. HL c. SAS
b. AAS d. SSS

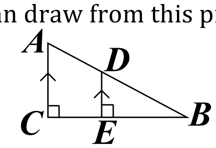
14. A bird is flying in a straight line out of a window on the side of a 42 yard tall building toward the roof of a 46 yard tall building. A photographer takes a picture of the bird at point *A*. At that moment, how far is the bird from the roof?



15. A 96-foot-long support wire for a 15-foot tall post runs from the top corner of a building to a point on the ground, forming a straight line. The length of the wire from the top of the building to the top of the light post is 78 feet. How tall is the building?



16. Which are NOT valid conclusions that you can draw from this picture?



a. △ABC ≅△ DBE
b. △ABC ~ △ DBE
c. Slope of $\overline{AD}$ = slope of $\overline{DB}$
d. $\frac{DB}{DE} = \frac{AB}{CB}$
e. $\frac{DB}{EB} = \frac{AB}{CB}$
f. $\overline{AC} \cong \overline{DE}$
g. $\overline{DB} \cong \overline{EB}$

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Geometry:

17. What is the name of the reason that states "On $\triangle ABC$, $m\angle ABC + m\angle BCA + m\angle CAB = 180°$."
    a. Congruent Supplement Theorem
    b. Triangle Sum Theorem
    c. Angle Addition Postulate
    d. Definition of a Midpoint
    e. Definition of Congruence
    f. Segment Addition Postulate
    g. Addition Property of Equality
    h. Congruent Complement

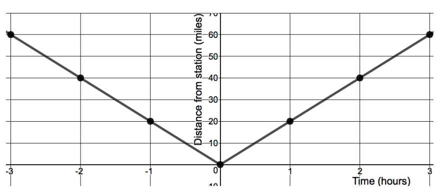
18. Which of the following statements are true?
    a. An isosceles triangle cannot have three sides that are all different lengths
    b. The base is bisected by the altitude of an isosceles triangle
    c. The altitude of an isosceles triangle does not create two congruent triangles
    d. An isosceles triangle can have three congruent sides
    e. The vertex angle on an isosceles triangle is bisected by the altitude
    f. The base angles on an isosceles triangle are not congruent
    g. On an isosceles triangle, the perpendicular bisector of the base is the altitude

19. Which of the following are true?
    a. Two lines can intersect at exactly two distinct points
    b. The intersection of a plane and a line can happen at exactly three distinct points
    c. Two planes can have an infinite number of intersection points
    d. A line and a plane may have no points of intersection
    e. Two planes can intersect each other at a single point
    f. A line can intersect a plane at a single point
    g. A line can intersect a plane at an infinite number of points

Inverses and Other Functions:

20. Given the function $f(x) = -4x + 36$, write the inverse function.

21. A regional train passes by a certain train station halfway along its trip each day. The graph models the train traveling at a constant speed. Which equation best represents the graph?



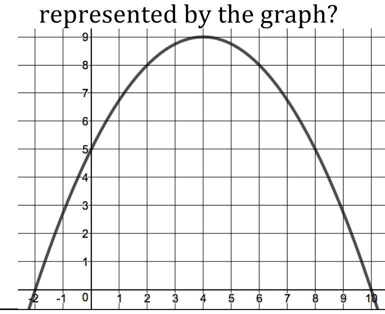
    a. $f(x) = |x + 20|$
    b. $f(x) = |20 - x|$
    c. $f(x) = |x| + 20$
    d. $f(x) = |20x|$

Quadratics:

22. Write a function in vertex form that represents a parabola that is translated 3 units to the left and 5 units up from the function $f(x) = x^2$.

23. What are the roots of the quadratic equation?
    $y = 3x^2 + x - 24$

24. What is the range of the function represented by the graph?



25. A small rocket on a lunar outpost around Jupiter was launched from a 45-meter platform. The height of the rocket is modeled by the function $h(t) = -5t^2 + 40t + 45$, where t is time in seconds and $h(t)$ is the height of the rocket in meters.
    a. What will be the value of $h(t)$ when the rocket hits the ground?
    b. Find the time when the rocket hits the ground, clearly showing how you used the equation.

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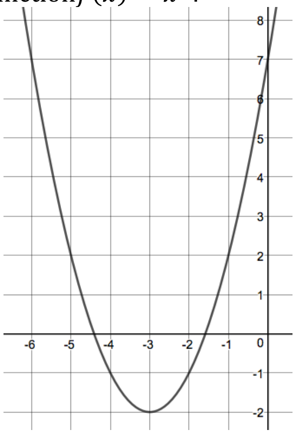
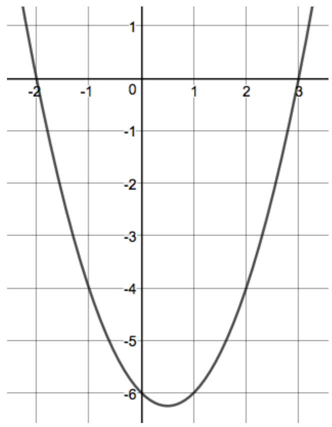
26. How has this graph been translated from a graph of the function $f(x) = x^2$?

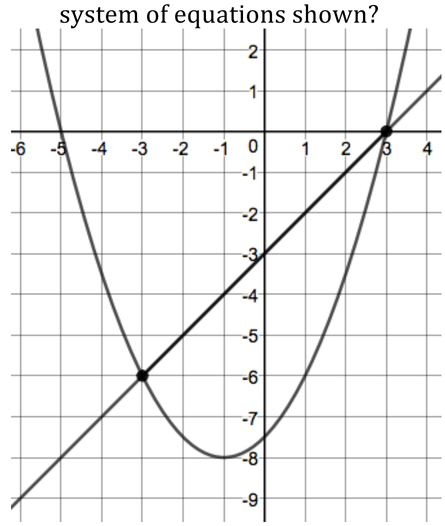


27. Complete the factored form of polynomial shown in the graph below.

$y = (x\_\_\_\_\_\_\_\_)(x\_\_\_\_\_\_\_\_)$



28. What are the solution(s) to the system of equations shown?



Polynomials:

29. Simplify the expression.
$(7x^2 - 9x) + (-5x^3 - 5x^2 + 2)$

30. Simplify the expression.
$(3x - 15)^2$

31. What is the product of the polynomials?
$x + 4$ and $2x^2 - 3x - 7$

32. Under which operations are the set of integers NOT open?
   a. Addition
   b. Subtraction
   c. Multiplication
   d. Division

33. In which sets does the number -9 NOT belong?
   a. Rational numbers
   b. Integers
   c. Whole Numbers
   d. Natural Numbers
   e. Irrational Numbers
   f. Real Numbers
   g. Imaginary Numbers

Final Exam Review – End of Unit 7

ANSWERS

1. CONGRUENT & SUPPLEMENTARY	2. CONGRUENT & BISECT EACH OTHER	3. CONGRUENT & PARALLEL	
4. PERPENDICULAR	5. TWO PAIRS	6. TWO PAIRS	7. KITE
8. TRAPEZOID	9. PARALLELOGRAM, RECTANGLE & RHOMBUS		
10. c. 64 square units	11. 4.7 ft	12. 692.8 ft	13. c. SAS
14. 16 yd	15. 80 ft	16. a, d, f, & g	17. b. Triangle Sum Thm
18. a, b, d, e & g	19. c, d, f & g	20. $f(x) = \frac{x}{-4} + 9$	21. d. $f(x) = \lvert 20x \rvert$
22. $f(x) = (x+3)^2 + 5$	23. $x = -3$ *or* $x = \frac{8}{3}$	24. $y \leq 9$	25a. 0 m; 25b. 9 sec
26. left 3 & down 2 units	27. $y = (x\underline{-3})(x\underline{+2})$	28. $(-3, -6)$ & $(3, 0)$	29. $-5x^3 + 2x^2 - 9x + 2$
30. $9x^2 - 90x + 225$	31. $2x^3 + 5x^2 - 19x - 28$	32. a, b & c	33. c, d, e & g