

Final Exam Review – End of Unit 9

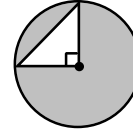
Unit 9: Volume

1. The volume of a cone is 152 cubic meters and the height of the cone is 6 centimeters. What is the radius of the cone to the nearest whole number?

Unit 8: Circles

2. Which of the following statements are NOT true?
- A tangent will always intersect a circle in exactly one point.
  - A diameter is a type of chord.
  - A chord will always intersect a circle in exactly two points.
  - A radius is a type of tangent.

3. A right triangle with sides the length of the radius is within a circle. If the radius of the circle is 4 centimeters, what is the area of the shaded region?

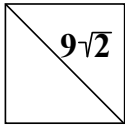


Unit 7: Quadrilaterals

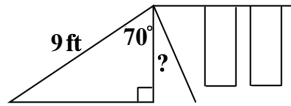
4. Which of the following statements are true?
- The opposite sides of a rectangle will always be both parallel and congruent.
  - A parallelogram has exactly one pair of parallel sides.
  - A trapezoid will always have two pairs of opposite sides that are parallel.
  - All rhombi are squares.

Unit 6: Right Triangle Trigonometry

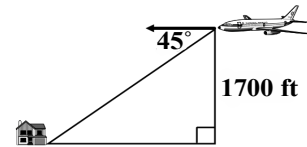
5. The figure shown is a square. What is the area of the square?



6. In the diagram shown, a 9-foot slide is attached to a swing set. The slide makes a  $70^\circ$  angle with the swing set. Which answer most closely represents the height of the slide?

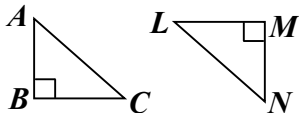


7. Regina is flying an airplane at an altitude of 1700 ft. She sees her house on the ground at a  $45^\circ$  angle of depression. What is Joanna's horizontal distance from her house at this point?

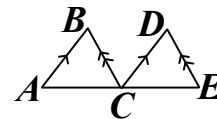


Unit 5: Similar Triangles

8. In the figure shown,  $\triangle ABC$  and  $\triangle NML$  are isosceles triangles with a vertex angle at  $B$  &  $M$ , respectively.  $\overline{AB} \cong \overline{NM}$ . Which theorem could be used to prove  $\triangle ABC \cong \triangle NML$ ?

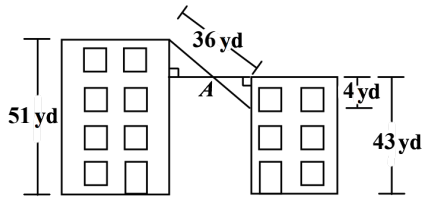


9. Which is NOT a valid conclusion that you can draw from this picture?

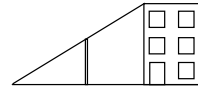


- $\angle BAC \cong \angle DCE$
- $\triangle ABC \sim \triangle CDE$
- Slope of  $\overline{BC} = \text{slope of } \overline{DC}$
- $\angle BCA \cong \angle DEC$

10. Two kids decided to string a rope from the roof of a 51 yard tall building to a window on the side of a 43 yard tall building so that they could send a bucket full of toys into the window. On their first try, the bucket got stuck on a clothesline at point A. How far did the bucket travel down the rope?



11. A 75-meter-long support wire for a 14-meter-tall light pole 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 pole is 40 meters. How tall is the building?



**Geometry:**

12. What is the name of the reason that states "If two angles are congruent to each other, then they have equal measures."  
 a. Triangle Sum Theorem  
 b. Congruent Supplement Theorem  
 c. Definition of Congruence  
 d. Segment Addition Postulate

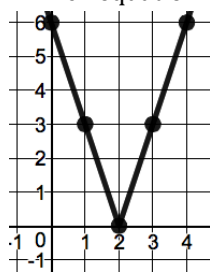
13. Which of the following statements is NOT true?  
 a. The altitude bisects the vertex angle of an isosceles triangle.  
 b. An equilateral triangle is also isosceles.  
 c. The base angles of an isosceles triangle will not always be congruent.  
 d. The altitude of an isosceles triangle is the perpendicular bisector of the base.

14. Which of the following is NOT true?  
 a. A line and a plane can have an infinite number of points of intersection.  
 b. A line and a plane can have exactly two points of intersection.  
 c. A line and a plane can have exactly one point of intersection.  
 d. A line and a plane can have no points of intersection.

**Inverses and Other Functions:**

15. A jogger passes by his childhood home 2 hours after the halfway mark on his road trip. The graph models him traveling at a constant speed. Which equation best represents the graph?

- a.  $f(x) = |3x| - 6$
- b.  $f(x) = |3x - 6|$
- c.  $f(x) = |3x + 6|$
- d.  $f(x) = |3x| + 6$

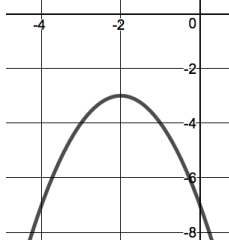


16. Given the function  $f(x) = 9x + 18$ , write the inverse function.

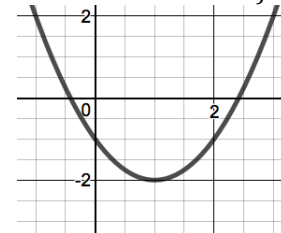
**Quadratics:**

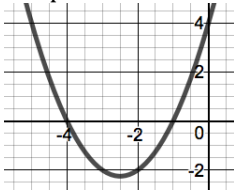
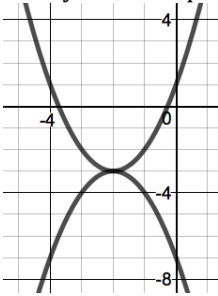
17. Write a function in vertex form that represents a parabola that is translated 8 units to the right and 2 up from the function  $f(x) = x^2$ ?

18. What is the range of the function represented by the graph? Write your answer in the following format: "All real numbers \_\_\_\_ than or equal to \_\_\_\_."



19. How is this graph different from a graph of the function  $f(x) = x^2$  (list all transformations)?



<p>20. What are the roots of the quadratic equation?  <math>y = 2x^2 + 7x - 30</math></p> <p>a. <math>x = -6</math> and <math>x = 2.5</math>          b. <math>x = 6</math> and <math>x = -2.5</math>          c. <math>x = -6</math> and <math>x = 5</math>          d. <math>x = 6</math> and <math>x = -5</math></p>	<p>21. Which polynomial does the graph represent?</p>  <p>a. <math>y = (x - 4)(x - 1)</math>          b. <math>y = (x + 4)(x + 1)</math>          c. <math>y = (x - 4)(x + 1)</math>          d. <math>y = (x + 4)(x - 1)</math></p>	<p>22. What are the solution(s) to the system of equations shown?</p> 
<p>23. A small rocket on a lunar outpost around Jupiter was launched from a 96-meter platform. The height of the rocket is modeled by the function <math>h(t) = -4t^2 + 8t + 96</math>, where <math>t</math> is time in seconds and <math>h(t)</math> is the height of the rocket in meters.</p> <p>a. What will be the value of <math>h(t)</math> when the rocket hits the ground?          b. Find the time when the rocket hits the ground, clearly showing how you used the equation.</p>		

Polynomials:

<p>24. Simplify the expression.  <math>(9x^4 - 1) + (-12x^4 - 7x^2 + 8x)</math></p>	<p>25. Simplify the expression.  <math>(6x - 9)^2</math></p>	<p>26. What is the product of the polynomials?  <math>x - 3</math> and <math>6x^2 - 5x - 11</math></p>
<p>27. Under which operations are the set of whole numbers NOT open?</p> <p>a. Addition          b. Subtraction          c. Multiplication          d. Division</p>	<p>28. In which sets does the number 12 NOT belong?</p> <p>a. Rational numbers          b. Integers          c. Whole Numbers          d. Natural Numbers          e. Irrational Numbers          f. Real Numbers          g. Imaginary Numbers</p>	

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Answers:

1. 5 m	2. D	3. $16\pi - 8$	4. A
5. 81	6. 3.1 ft	7. 1700 ft	8. SAS
9. C	10. 24 yd	11. 30 m	12. C
13. C	14. B	15. B	16. $f^{-1}(x) = \frac{1}{9}x - 2$
17. $f(x) = (x - 8)^2 + 2$	18. All real numbers less than or equal to -3.	19. Translated right 1 unit and down 2 units	20. A
21. B	22. $(-2, -3)$	23. a. $h(t) = 0$ b. 6 sec.	24. $-3x^4 - 7x^2 + 8x - 1$
25. $36x^2 - 108x + 81$	26. $6x^3 - 23x^2 + 4x + 33$	27. A & C	28. G