Raising Grade 10 Summer packet

DUE ON THE FIRST DAY OF SCHOOL

The problems in this packet are designed to help you review topics from previous mathematics courses that are essential to your success in your next math class. You are expected to bring this completed packet to the class on the first day of school. In addition, this packet will count as part of your first quarter grade. Upon returning, you will be ASSESSED on the content of this packet. All contents outlined in this packet are Pre- Ap Geometry and Statistics Math objectives. Neatly SHOW YOUR WORK on a separate sheet of paper.

Multiple Choice

1. 1. What is the measure of an angle that is supplementary to a 65° angle?

   A. 115° B. 125° C. 135° D. 155°

2. 2. If two lines are cut by a transversal and alternate interior angles are congruent, what can be concluded?

   A. Lines are perpendicular B. Lines are parallel C. Lines are skew D. None of the above

3. 3. What is the sum of the interior angles of a hexagon?

   A. 540° B. 720° C. 900° D. 1080°

4. 4. Which transformation results in a congruent figure?

   A. Dilation B. Reflection C. Stretch D. Enlargement

5. 5. What is the distance between points A(2, 3) and B(6, 7)?

   A. 4 B. 5 C. $\sqrt{16}$ D. $\sqrt{32}$

6. 6. Which statement is true about a rectangle?

   A. All sides are equal B. Opposite angles are supplementary C. Diagonals bisect each other D. Diagonals are unequal

7. 7. What is the slope of a line perpendicular to $y = -3x + 1$?

   A. –3 B. 1/3 C. 3 D. –1/3

8. 8. If a triangle has sides of length 3 cm, 4 cm, and 5 cm, what type of triangle is it?

   A. Acute B. Obtuse C. Right D. Scalene

9. 9. What is the area of a triangle with base 10 cm and height 6 cm?

   A. 30 cm^2 B. 60 cm^2 C. 16 cm^2 D. 20 cm^2

10. 10. The equation of a circle is $(x - 2)^2 + (y + 3)^2 = 25$. What is its radius?

    A. 2 B. 3 C. 5 D. 25

11. 11. Which set of data shows a negative correlation?

    A. Hours studied vs test score B. Age vs income C. Temperature vs hot chocolate sales D. Exercise time vs weight

12. 12. What does a residual of 0 indicate in a regression analysis?

    A. The point is far above the line B. The point is far below the line C. The point lies on the line D. None of the above

13. 13. Which transformation preserves orientation and size?

    A. Translation B. Rotation C. Reflection D. All of the above

14. 14. What is the midpoint between (2, 4) and (6, 8)?

    A. (4, 6) B. (3, 5) C. (5, 7) D. (8, 12)

15. 15. Which of the following has a correlation coefficient closest to –1?

A. Perfect positive linear relationship B. Random scatter C. Perfect negative linear relationship D. No relationship

16. 16. What type of symmetry does a regular hexagon have?

A. 3 lines B. 4 lines C. 6 lines D. No symmetry

17. 17. Which equation represents a line parallel to $y = 2x + 5$?

A. $y = -2x + 3$ B. $y = 2x - 1$ C. $y = \frac{1}{2}x + 2$ D. $y = -\frac{1}{2}x + 3$

18. 18. What does a line of best fit do?

A. Passes through all points B. Minimizes residuals C. Connects max and min D. None of the above

19. 19. Which of the following transformations is not rigid?

A. Translation B. Rotation C. Dilation D. Reflection

20. 20. What is the surface area of a cube with side length 4?

A. 16 B. 32 C. 64 D. 96

Short Answer

21. 1. Find the area of a circle with radius 7 cm.
22. 2. Determine the volume of a cylinder with height 10 cm and radius 3 cm. Use $\pi \approx 3.14$.
23. 3. Find the length of the missing side of a right triangle with legs 6 cm and 8 cm.
24. 4. Calculate the slope of the line passing through the points (3, 7) and (6, 13).
25. 5. A triangle has angles 40°, 60°, and x. Find x.
26. 6. Translate the point (2, –5) 4 units right and 3 units up.
27. 7. Determine whether the triangle with sides 7 cm, 24 cm, and 25 cm is a right triangle.
28. 8. Write the equation of a line in slope–intercept form that passes through (0, 5) and (4, 13).
29. 9. Find the perimeter of a rectangle with length 12 cm and width 7 cm.
30. 10. Identify the transformation that maps triangle ABC onto triangle A'B'C' when each vertex moves 3 units left and 2 units up.
31. 11. Find the radius of a circle with an area of 100π.
32. 12. If the diameter of a circle is 16 cm, what is its circumference?
33. 13. Determine whether the relation {(1,2), (2,3), (3,4), (4,5)} is a function.
34. 14. Find the interquartile range of the data set: [5, 7, 8, 12, 13, 15, 17].
35. 15. Find the equation of a circle with center (4, –3) and radius 6.

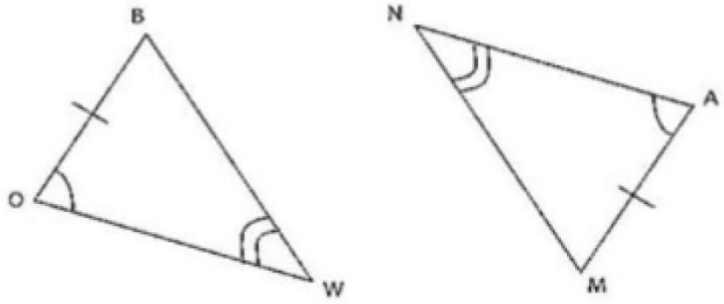
Open-Ended

36. 1. Explain how to use the Pythagorean Theorem to find the diagonal of a rectangle.
37. 2. Given a scatter plot with a negative trend, describe how to determine the line of best fit and interpret its slope.

38. 3. Describe how to construct the perpendicular bisector of a given line segment using a compass and straightedge.
39. 4. Explain how to prove that two triangles are congruent using the SSS criterion.
40. 5. Design a survey that could lead to collecting a data set with a positive correlation. Describe the variables.
41. 6. Describe how transformations can be used to show that two figures are congruent.
42. 7. Explain how to calculate the volume of a cone and provide an example.
43. 8. Given a figure and its image under a rotation, describe how to determine the center and angle of rotation.
44. 9. Construct a triangle given three side lengths and explain how to verify if it's a valid triangle.
45. 10. Analyze a box plot and describe how it can be used to compare two data sets.
46. 11. Explain how to determine the equation of a line given two points.
47. 12. Describe how residuals help assess the fit of a line of best fit.
48. 13. Discuss the difference between rigid and non-rigid transformations with examples.
49. 14. Explain how to calculate the area of a composite figure.
50. 15. Describe how to interpret the slope and y-intercept of a linear model in a real-world context.

51.

Directions - use the diagram to complete the congruence statement:



$\triangle BOW \cong \triangle$ [ ]

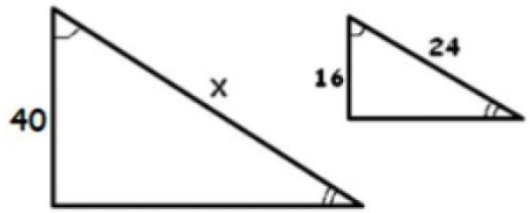
52.

Solve for x in this proportion. Show all work on a separate sheet of pap

$$\frac{x+7}{9} = \frac{8}{5}$$

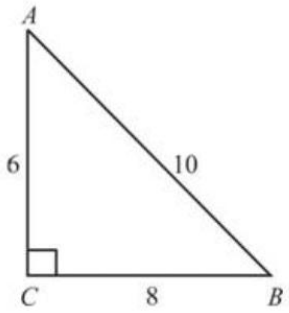
53.

The triangles shown are similar. Create a proportion to find x. Show all work on paper:



54.

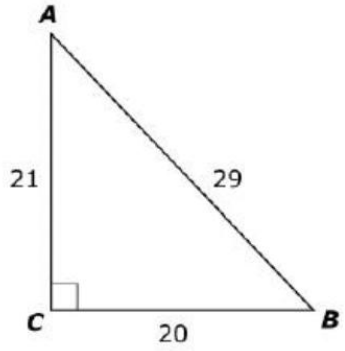
. Using the figure below determine the following ratios.



ıte: Evaluate your answer to simplest fraction form.

Ratio	Value
sin A	1
cos A	2
tan A	3
sin B	4
cos B	5
tan B	6

55.



Enter the ratio equivalent to $\sin(B)$.

56.

Solve the following quadratic equations by factoring, taking the square roots, completing the square, or using the quadratic formula.

1. $3x^2 = 63 + 12x$

x = or x =

2. $r^2 - 10r - 61 = 4$

x =

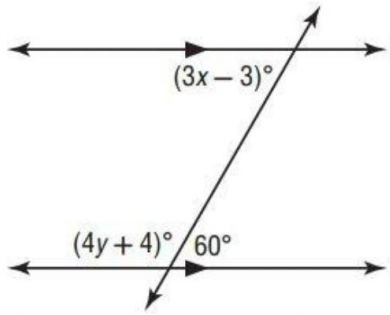
3. $3x^2 + 9x + 2 = 0$ x =

4. $x^2 + 4x + 20 = 10$

x =

57.

Find the measure of x and y (show all work):



x =

y=

58.

What is the distance between the points $(2, 10)$ and $(-4, 2)$ in the $xy-$ plane?

(A) 6

(B) 8

(C) 10

(D) 14

(E) 18

59.

$\overline{AB}$ has endpoint $A(-2, 3)$ and midpoint $M(4, 6)$.

Find the coordinates (x, y) of B.

60.

The equation of a circle C is $(x+2)^2+(y-7)^2=36$. What is its center (h,k)?

(A) $(-2,-7)$

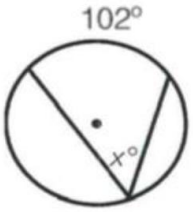
(B) $(-2,7)$

(C) $(2,-7)$

(D) $(2,7)$

61.

p.6 (back) Circles: Arc Measure, Central Angles and Inscribed Angles
#6 What is the value of x in the diagram?



$x =$ _____ degrees

62.

Which statement about angles of a circle is true?

(A) An angle inscribed in a semicircle is a right angle.

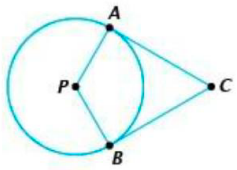
(B) A central angle has one half the measure of the arc it intercepts.

(C) An inscribed angle has the same measure as the arc it intercepts.

(D) An inscribed angle in which one of the sides is a diameter is obtuse.

63.

$\angle ACB$ is a circumscribed angle of circle P. $m\angle ACB = 60^\circ$.

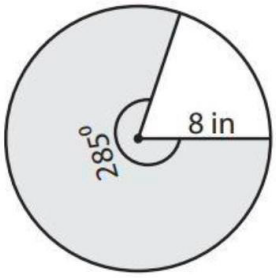


What is $m\angle APB$?

64.

Directions - Find the sector areas of both the grey and white areas:

*Use 3.14 in place of π

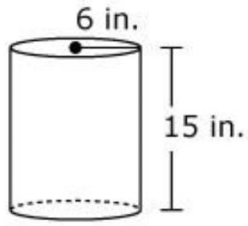


a) Sector area (grey) = [ ] a (round to two decimal places)

b) Sector area (white) = [ ] b (round to two decimal places)

65.

Circular cylinder W and some of its dimensions are shown in this diagram.



Cylinder W

What is the volume, to the nearest cubic inch, of cylinder W?

Enter your answer in the space provided. Enter only your answer.

cubic inches