MPM1DI

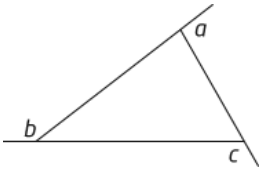
Summative Assessment Review Day 4 (Units 7, 8 & 9 - Chapters 7, 8 & 9)
[MEASUREMENT & GEOMETRY STRAND]

☺ **Geometric Relationships (chapter 7 in text)**

- From grade 8 … you must remember
  - ✓ How to classify triangles using side lengths
  - ✓ How to classify triangles using angle measures
  - ✓ When two lines intersect, the opposite angles are equal
  - ✓ The sum of the angles of a triangle is _____°
  - ✓ When a transversal crosses parallel lines,
    - Alternate angles are equal (Z pattern)
    - Corresponding angles are equal (F pattern)
    - Co-interior angles have a sum of 180° (C pattern)
- Grade 8 review is on pages 362-363 of textbook.
- **Terminology** (all definitions are in text chapter seven – look for green highlighted words): Vertex, interior angle, exterior angle, ray, equiangular, adjacent, supplementary, complementary, transversal, congruent, convex polygon, concave polygon, pentagon, hexagon, heptagon, octagon, regular polygon, midpoint, median (the line segment joining a vertex of a triangle to the midpoint of the opposite side), bisect, right bisector, centroid (the point where the medians of a triangle intersect), similar
- The sum of the exterior angles of a convex polygon is _____°.
  - ✓ RECALL: Convex polygon – all interior angles measure less than 180°

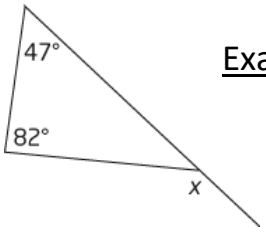
  See red box on page 370 for diagram of triangle, red box on page 380 for diagram of quadrilateral, 7.3 for convex polygons in general.
- The exterior angle at each vertex of a triangle is equal to the sum of the interior angles at the other two vertices. (E.A.T.) See red box on page 370 for diagram.
- The sum of the interior angles of a quadrilateral is _____°
- For a polygon with n sides, the sum of the interior angles, in degrees, is S =
- A line segment joining the midpoints of two sides of a triangle is _____ to the third side and _____ as long.
- The height of a triangle formed by joining the midpoints of two sides of a triangle is _____ the height of the original triangle.
- The medians of a triangle bisect its _____.
- Joining the midpoints of the sides of any quadrilateral produces a _____
- The diagonals of a parallelogram _____ each other.
- The diagonals of a square are equal and they _____ each other at _____ angles.
- The diagonals of a rectangle _____ each other.
- The diagonals of a kite meet at _____ angles.
- The diagonals of a rhombus bisect each other at _____ angles.

Example 1: In the diagram, $a + b + c =$

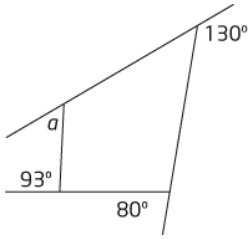


a. 180°
b. 360°
c. 540°
d. None of these.

Example 2: Find the measure of the exterior angle, *x*.



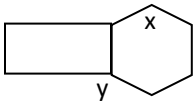
Example 3: Find the measure of the exterior angle, *a*.



Example 4: A regular polygon has exterior angles equal to 30°. How many sides does the polygon have?

Example 5: A regular polygon has interior angles equal to 140°. How many sides does the polygon have?

Example 6:



Calculate the value of angle x and angle y, given that the hexagon is regular.

☺ Measurement Relationships (chapter 8 in text)

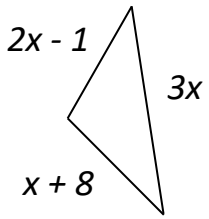
- Be able to use given formulas to find the area and perimeter of 2-D figures and the surface area, volume of 3-D figures.
- Be able to use the Pythagorean theorem as it relates to slant height, height, and radius in a cone $s^2 = h^2 + r^2$ and a pyramid $s^2 = h^2 + \left(\frac{1}{2}b\right)^2$.
- The volume of a prism is 3 times the area of a pyramid with the same dimensions.
- The volume of a cylinder is 3 times the area of a cone with the same dimensions.

Example 7: The volume of a cylinder is 300 cm^3. What is the volume of a cone with the same dimensions as the cylinder?

Example 8 A cone has a radius 7cm and a height of 18 cm. What is its slant height?

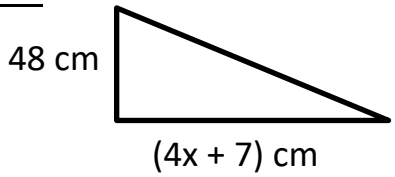
Example 9: A sphere has a diameter 12 cm. What is its volume, to the nearest cubic centimeter?

Example 10:



The perimeter of the triangle to the left is 124 cm. Determine the length of each side of the triangle

Example 11:



The area of the right-triangle with base (4x +7) cm and height 48 cm is 1320 cm^2. Determine the length of the base and the length of the hypotenuse.

☺ **Optimizing Measurements (chapter 9 in text)**

- 2D - Optimizing – determining dimensions that will maximize the area or minimize the perimeter
  - 4-sided rectangle – a _____ optimizes the area and perimeter
    - To determine dimensions,
      Given Perimeter: Given Area:

  - 3-sided rectangle (one side does not need fencing) – area and perimeter are optimized when l = 2w
    - To determine dimensions,
      Given Perimeter: Given Area:

- 3D – Optimizing – determining dimensions that will maximize the volume or minimize the surface area
  - Square-based Prism – a _____ optimizes the volume and surface area
    - To determine dimensions,
      Given Volume: Given Surface Area:

  - Cylinder – the volume and surface area are both optimized when h = 2r
    - To determine dimensions,
      Given Volume: Given Surface Area:

Do :
Pages 520-521 # 1, 2, 4, 7 (ch. 7)
Pages 410 # 1 – 7, 9, 10 (ch. 7)
Page 520 # 8-15, 16a (ch. 8,9)
Pages 472-473 # 1 – 12 (ch. 8)
Pages 518 – 519 # 1 – 9 (ch. 9)
Redo old Unit 7, 8 & 9 Tests.