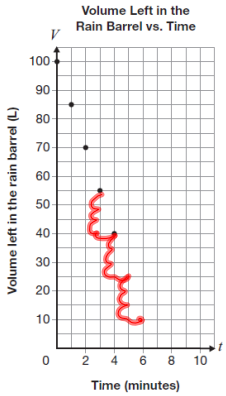
7 A rain barrel full of water is drained at a constant rate. Data for the first few minutes of draining is shown on the grid below.



m = -3

After 6 minutes, the draining is stopped.

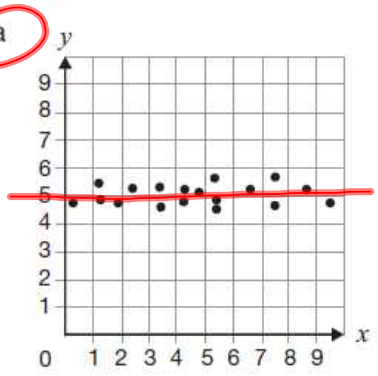
How much water is needed to refill the rain barrel?

a 90 L
b 75 L
c 25 L
d 10 L

3
3
1

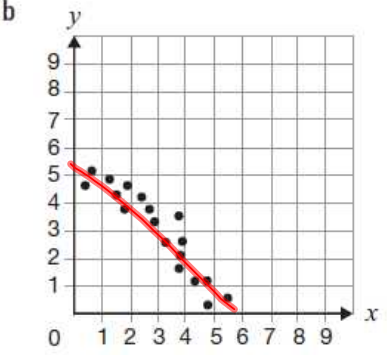
10 For which scatter plot could the line $y = 5$ be the line of best fit?

a

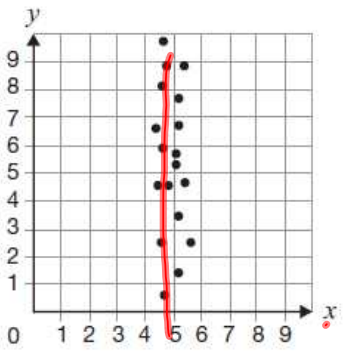


y=5

b

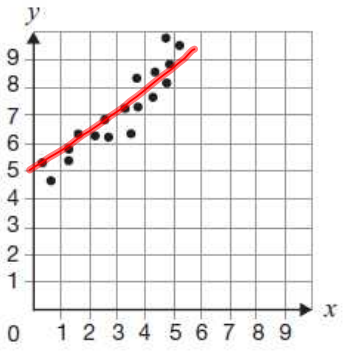


c



X=5

d



December 01, 2014

Learning Goals

1. To review the different types of triangles and quadrilaterals.
2. To review angle properties.
3. To understand that the sum of the interior angles of a triangle is 180^0.
4. To understand that the sum of the interior angles of a quadrilateral is 360^0.
5. To understand that the sum of the interior angles of a n-gon is $(n - 2) \times 180^0$.
6. To understand the properties of a regular polygon.

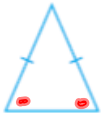
7.1 - Interior Angles of Polygons

Review

1. **Triangles**

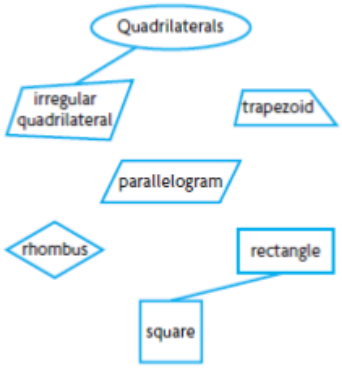
Equilateral

Scalene



Isosceles

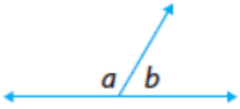
2. **Quadrilaterals**



3. Angle Properties

Straight Angles

The sum of angles that form a straight angle is 180°.
$\angle a + \angle b = 180°$



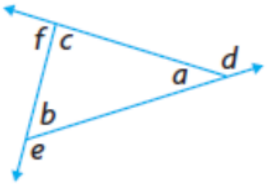
Example One

Determine the value of the unknown angle.

$X = 180 - 77$
$= 103°$

Interior and Exterior Angles of a Triangle

The sum of the interior angles in a triangle is 180°.
$\angle a + \angle b + \angle c = 180°$
Each exterior angle equals the sum of the two interior angles opposite it.

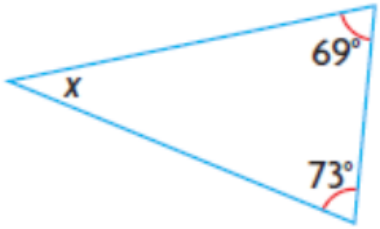


$\angle d = \angle b + \angle c$	$\angle e = \angle a + \angle c$	$\angle f = \angle a + \angle b$

Example Two

Determine the value for the unknown angle.

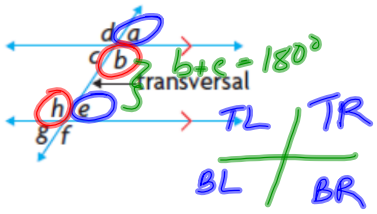
$X = 180 - 69 - 73$
$= 38°$



Angle Properties of Parallel Lines

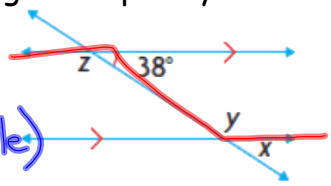
When a transversal crosses 2 parallel lines:

- Corresponding angles are equal.
  $\angle a = \angle e$ $\angle c = \angle g$
  $\angle b = \angle f$ $\angle d = \angle h$
- Alternate angles are equal.
  $\angle b = \angle h$ $\angle c = \angle e$
- The sum of the interior angles on the same side of the transversal is 180°.
  $\angle b + \angle e = 180°$ $\angle c + \angle h = 180°$



Example Three

Determine the values of the unknown angles. Explain your solution.



X = 38° (corresponding angle)

Y = 142° (interior angle)

Z = 142° (alternate angle)

Key Ideas

1. The sum of the interior angles of a **triangle** is 180°.

2. The sum of the interior angles of a **quadrilateral** is 360°.

3. The sum of the interior angles of a **n-gon** is (n - 2) × 180°.

Note: a n-sided polygon is often called an n-gon. So, a 20-sided polygon is called a 20-gon.

Example Four

What is the sum of the interior angles of a polygon with each number of sides?

a) 7 sides

$7\text{-gon} = (7-2) \times 180$
$= 5 \times 180$
$= 900°$

b) 10 sides

$10\text{-gon} = (10-2) \times 180°$
$= 8 \times 180°$
$= 1440°$

c) 24 sides

$24\text{-gon} = (24-2) \times 180°$
$= 22 \times 180°$
$= 3960°$

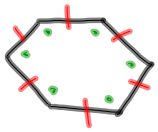
Note: A **regular polygon** has all sides equal and all angles equal.

Example Five

What is the sum of the interior angles in a regular hexagon? What is the measure of each angle?

hexagon = 6 sides.

$6\text{-gon} = (6-2) \times 180°$
$= 4 \times 180°$
$= 720°$



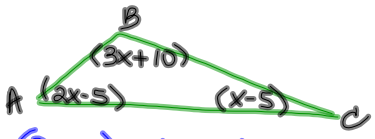
Each Angle

$° = 720 \div 6$
$= 120°$

∴ each angle is 120°.

Complete: p. 384 #2 - 4, 7ab
p. 390 # 1, 2 (just calculate the sum of the interior angles)

p. 386 # 7a)



$180 = (2x-5) + (3x+10) + (x-5)$

$180 = 2x - 5 + 3x + 10 + x - 5$

$\frac{180}{6} = \frac{6x}{6}$, $x = 30°$

$A = (2x-5)$
$= (2 \times 30 - 5)$
$= 55°$

$B = (3x+10)$
$= (3 \times 30 + 10)$
$= 100°$