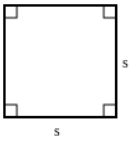
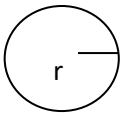
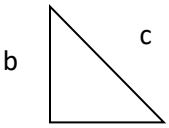
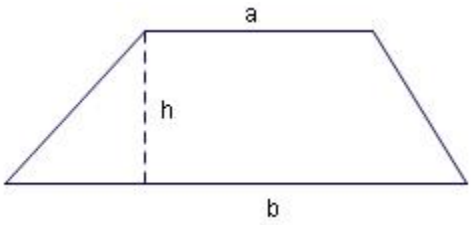
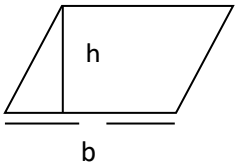
GEOMETRY

Shape	Area	Perimeter/ circumference
Square 	$A = s^2$	P = 4s
Rectangle  l w	A = lw	P= 2l+2w
Circle 	$A = \pi r^2$	C =$2\pi r$
Triangle 	A = 1/2bh	
Trapezoid 	A = $\frac{a+b}{2}$ h	
Parallelogram 	A = b x h	P = SOS

EXPONENTS

- $a + a = 2a$
- $ab + ab = 2ab$
- $a^2 + a^3 = a^5$
- $b^3 . b^2 = b^7$
- $\frac{b^9}{b^2} = b^7$
- $a \times c = ac$
- $a \times a = a^2$
- $ab \times ab = a^2b^2$
- $a^2 \times a^3 = a^5$
- $X^0 = 1$
- $X^{-1} = \frac{1}{X}$
- $x^a x^b = x^{a+b}$
- $\frac{x^a}{x^b} = x^{(a-b)} = \frac{1}{x^{(b-a)}}$
- $X^a y^a = (xy)^a$
- $(\frac{x}{y})^a = \frac{x^a}{y^a}$
- $(x^a)^b = x^{ab}$

PERCENTAGE

- Percent Increase

$$\frac{\text{final amount} - \text{original amount}}{\text{original amount}} \times 100$$

- Percent Decrease

$$\frac{\text{original amount} - \text{final amount}}{\text{original amount}} \times 100$$

- What % of = $\frac{focus}{total} \times 100$

STATISTICS AND PROBABILITY

- **ARITHMETIC MEAN (AVERAGE)**

  AVERAGE = $\frac{sum\ of\ items}{number\ of\ items}$

- **MEDIAN**
  - If there is an odd number of items on the list then the middle item equals the median.
  - If there are even number of items than median is average of two middle numbers.

The middle value in increasing or decreasing order

2, 3, 4, 5, 7 median = 4

2, 3, 4, 5 median = $\frac{3+4}{2} = 3.5$

- **MODE**

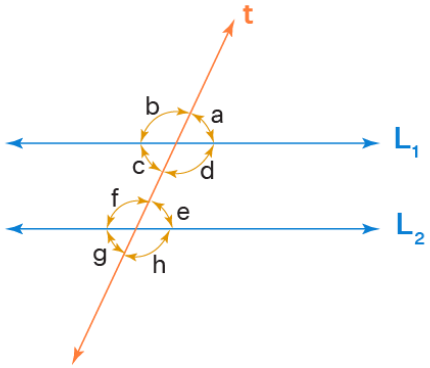
  The most frequently occuring value.

  Example: 1, 3, 3, 4, 5, 3, 7

  Mode = 3

ANGLES AND TRIANGLES

- **PARALLEL LINES**



Lines l and m are parallel. Vertical angles

b = c a = e

c = g b = f

d = e c = f

b = g

d = h

a = d

f = g

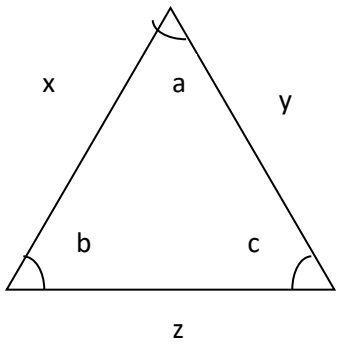
e = h

Hence, angles a, d, e, h are equal & angles b, c, f, g are equal

- **EQUILATERAL TRIANGLE**

x = y = z

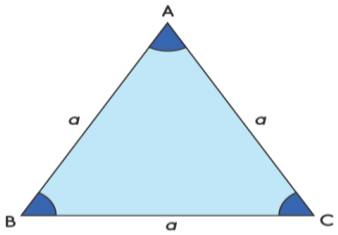
a = b = c



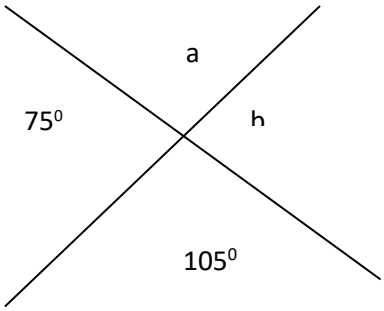
- **ISOSCELES TRIANGLE**

  a = a

  b = c



- **VERTICAL ANGLES**

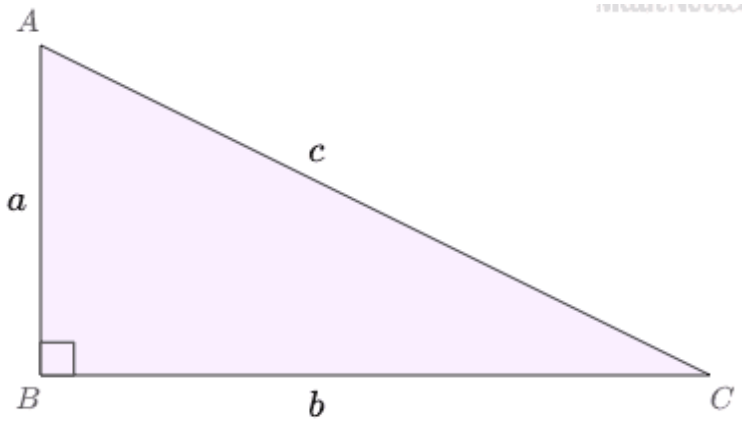


a = 105 b = 75

a + b = 180

- **RIGHT TRIANGLES & PYTHAGOREAN THEOREM**

c = hypotenuse (longest side of a right triangle) a & b are called "legs"



Pythagorean Theorem: $a^2 + b^2 = c^2$

SLOPES, POINTS, & LINES

- Slope Formula: m= $\frac{y2-y1}{x2-x1}$
- Slope of horizontal line = 0
- Slope of vertical line = undefined
- Standard Form: Ax + By =C
- Slope-Intercept Form: y= mx+ b
- Point-Slope Form: $y - y_1 = m(x-x_1)$
- Parallel lines: equal slopes ⊥ Lines: slopes are opposite reciprocals
- Distance formula : d=
- $\sqrt{(x_2}\text{-}x_1)2 + (y_2\text{-}y_1)^2$

QUANTITATIVE COMPARISONS

Example

$2x = y$

Quantity A

The perimeter of an equilateral triangle, with side = y

Quantity B

The perimeter of a square, with side = x

(A) Quantity A is greater.
(B) Quantity B is greater.
(C) The two quantities are equal.
(D) The relationship cannot be determined from the information given.

SOLUTION:
Calculate the perimeter of each polygon.
Perimeter of equilateral triangle = $3y$
Perimeter of square = $4x$
Use the equation to make both perimeters have the same variable. Substitute $2x$ for y.
Perimeter of equilateral triangle = $3y = 3(2x) = 6x$
Since x and y are positive numbers, $6x > 4x$. So quantity A is greater than quantity B.
The correct answer is (A).