PRIMARY MATHS SERIES

REVISION GUIDE FOR STANDARDS 7 AND 8

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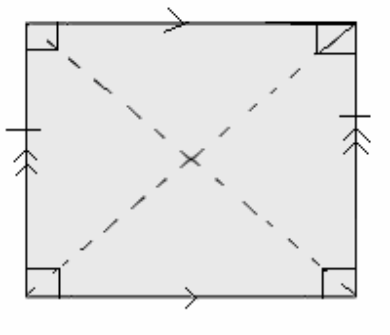
PROPERTIES OF GEOMETRIC SHAPES

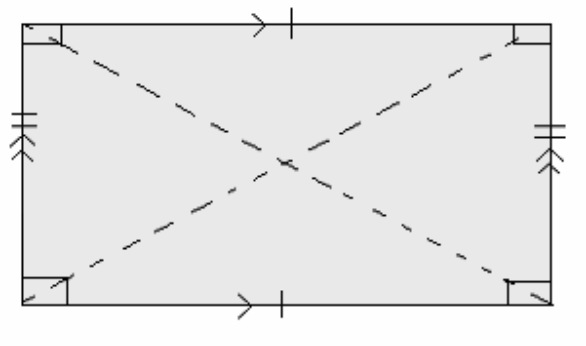
2.1 General Geometric Shapes

Square



- All sides are equal
- Opposite sides are parallel
- Each interior angle is a right angle (90^0)
- The interior angles total up to 360^0
- Diagonal bisect each other at right angles.
- Diagonals measure the same length and bisect interior angles.

Rectangle

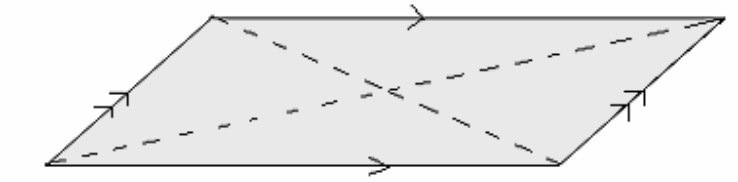


V

- Opposite ides are equal to each other

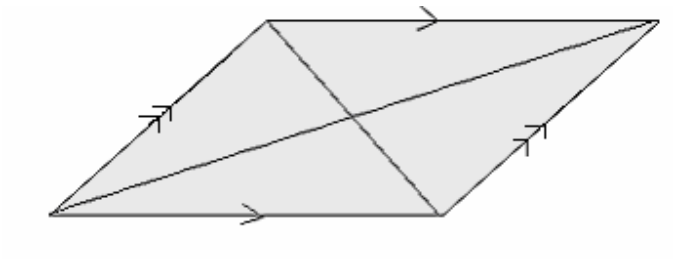
- Each interior angle is 90 and they all add up to 360^0
- Diagonals bisect each other but not at right angles

Parallelogram



- Opposite sides are equal and parallel to each other
- Opposite angles are equal
- Diagonals bisect each other
- Diagonals are not equal
- Adjacent angles are supplementary

Rhombus

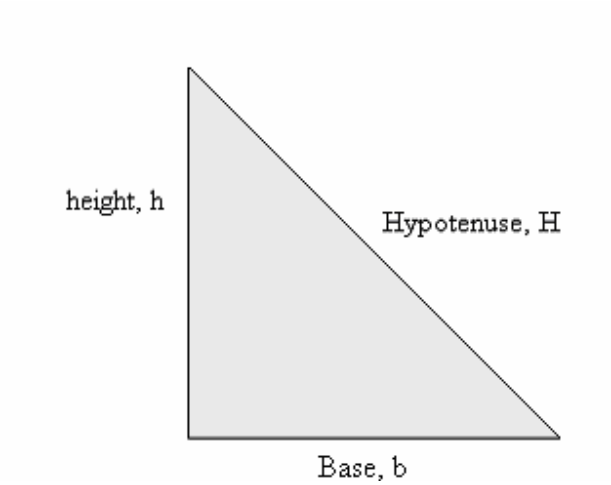


- All sides are equal
- Opposite sides are parallel
- Opposite angles are equal
- Diagnosis bisect each other at 90
- Diagonals bisect the interior angles

Trapezium

- The sum of the interior angles is 360
- Has a pair of parallel lines which are not of the same length
- Has a perpendicular height joining the two parallel lines

Right-angled triangle (Pythagorean relationship)

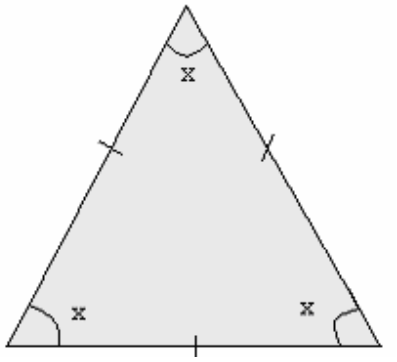


a) $H^2 = b^2 + h^2$
b) $b^2 = H^2 - h^2$
c) $H^2 = H^2 - b^2$

Examples of relationships

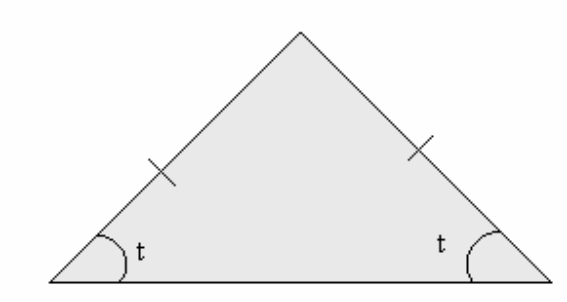
Base	Height	Hypotenuse
3	4	5
6	8	10
5	12	13
7	24	25
8	15	17
9	40	41

Equilateral triangle



- All sides are equal
- All angles are equal
- All sum of interior angles is 180^0
- Each angle measures 60^0

Isosceles triangle

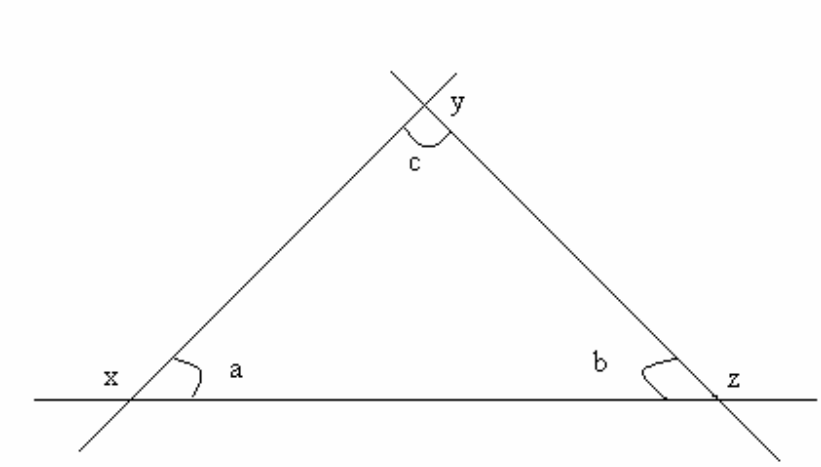


- Only two sides are equal
- Base angles are equal

2.2 Properties of Triangles and Parallel Lines

2.2.1 Triangle

Exterior angles



- Angles x, y, and z are *exterior angles* while a, b, and c are *interior angles*.
- Exterior angles add up to 360^0 while interior angles add up to 180^0.
- Angles x, a; b, z; and c, y; are adjacent to each other and they add up to 180^0 (supplementary)

2.2.2 Parallel Lines and Transversal

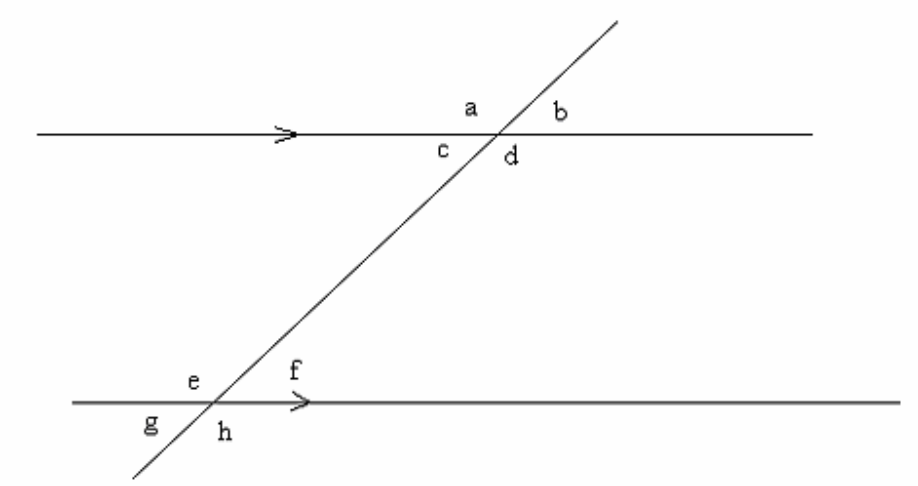


Figure 2.--

a) Angles at a point e.g. a + b+ c + d = 360^0

b) Vertically opposite e.g. a/d, b/c, f/g, e/h. They are equal

c) Corresponding angles e.g. b/f, a/e, a/e, c/h etc. They are equal

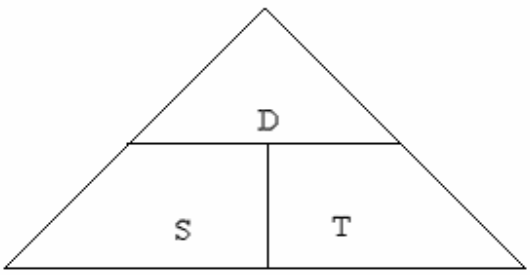
d) Alternate angles e.g. c/f, d/e are always equal.

e) Co-interior angles e.g. c/f, d/e, are always equal.

f) Co-interior/allied angles e.g. c/e, d/f are formed by parallel lines. They are supplementary.

2.3 Speed, Distance and Time

The formulae related to speed, distance and time can be derived from the following triangle.



That is,

(1) Distance, D = Speed, S x Time, T

(2) Speed, S = $\frac{\text{Distance, D}}{\text{Time, T}}$

(3) Time, T = $\frac{\text{Distance, D}}{\text{Speed, S}}$

Average Speed = $\frac{\text{Total distance covered}}{\text{Total time taken}}$

2.4 Money

Simple interest

(a) $I = \frac{PRT}{100}$

Where,

I = interest

P = Principal

R = Rate

T = Time

b) $P = \frac{100 \times I}{RT}$

c) $R = \frac{100 \times I}{PT}$

d) $T = \frac{100 \times I}{PR}$

e) Amount, A = Principal + Interest

Hire Purchase

a) Hire purchase = Deposit + Monthly Installment

HP = D + MI

b) Deposit = Hire purchase – monthly installment

D = HP – MI

c) Installments = $\frac{\text{Hire purchase – Deposit}}{\text{Number of months}}$

d) Number of months = $\frac{\text{Hire purchase – Deposit}}{\text{Installment}}$

Percentage increase, percentage decrease, discount, profit and loss

a) % increase = $\frac{\text{Increase}}{\text{Original}} \times 100$

b) % decrease = $\frac{\text{decrease}}{\text{Original}} \times 100$

c) % discount = $\frac{\text{discount}}{\text{Marked price}} \times 100$

d) % profit = $\frac{\text{profit}}{\text{buying price/ m.p}} \times 100$

e) % loss = $\frac{\text{loss}}{\text{buying price/m.p}} \times 100$