

# 4 Triangles

**i** There are 6 types of triangles.



**Equilateral**

all sides are equal  
all angles are equal



**Isosceles**

2 sides are equal  
2 angles are equal



**Scalene**

No sides are equal



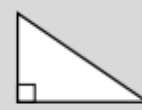
**Acute angled triangle**

3 acute angles



**Obtuse angled triangle**

1 angle obtuse



**Right angled triangle**

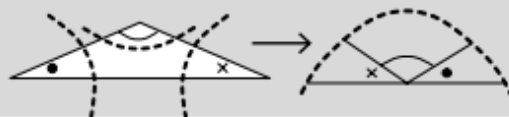
1 angle of  $90^\circ$

The three interior angles of a triangle always add up to  $180^\circ$ .

Draw any triangle on newspaper and cut it out.

Tear off corners.

Put them together to form a straight line, which we know has  $180^\circ$ .

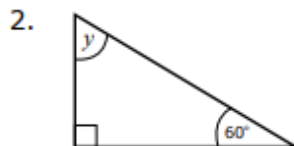


## Try these

Find the value of  $x$ ,  $y$ ,  $z$ .



$x =$  \_\_\_\_\_



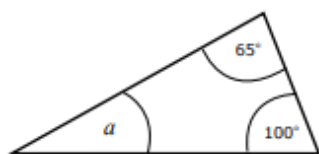
$y =$  \_\_\_\_\_



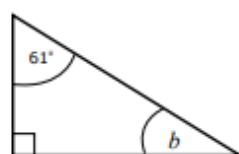
$z =$  \_\_\_\_\_

## Test Yourself

Find the unknown letters and solve the code.



$a =$  \_\_\_\_\_



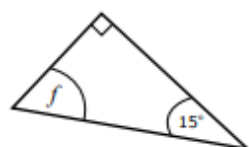
$b =$  \_\_\_\_\_



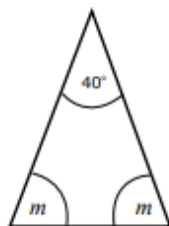
$c =$  \_\_\_\_\_



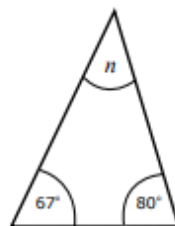
$d =$  \_\_\_\_\_



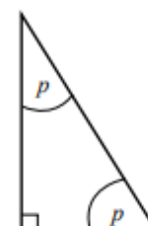
$f =$  \_\_\_\_\_



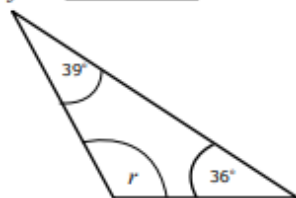
$m =$  \_\_\_\_\_



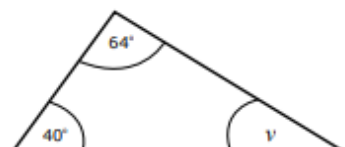
$n =$  \_\_\_\_\_



$p =$  \_\_\_\_\_



$r =$  \_\_\_\_\_



$v =$  \_\_\_\_\_

$\overline{33^\circ} \overline{90^\circ} \overline{90^\circ} \overline{110^\circ}$

$\overline{75^\circ} \overline{15^\circ} \overline{70^\circ} \overline{90^\circ} ?$

$\overline{75^\circ} \overline{105^\circ} \overline{15^\circ} \overline{70^\circ} \overline{90^\circ}$

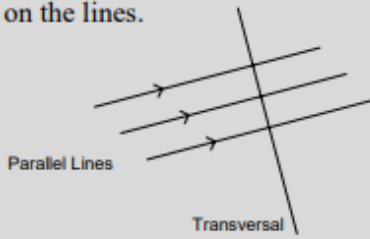
$\overline{75^\circ} \overline{90^\circ} \overline{15^\circ} \overline{105^\circ}$

$\overline{15^\circ} \overline{33^\circ} \overline{110^\circ}$

$\overline{105^\circ} \overline{90^\circ} \overline{15^\circ} \overline{110^\circ} !$

# 5 Parallel Lines

**i** **Parallel lines** never meet and they are always an equal distance apart. The symbol for parallel lines is  $\parallel$  on the lines.

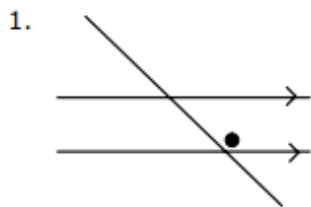


**Corresponding angles** and **alternate angles** are special angles formed when a line (transversal) cuts parallel lines.

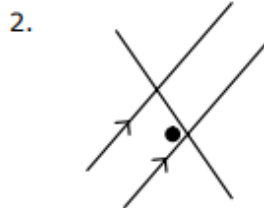


Corresponding angles are equal when lines are parallel (•). Alternate angles are equal when lines are parallel (x).

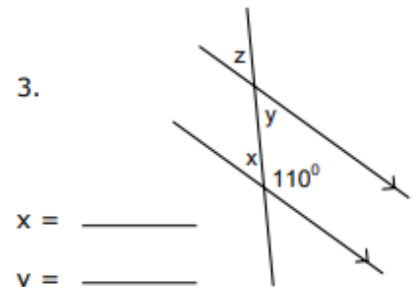
## Try These



Mark an angle alternate to •



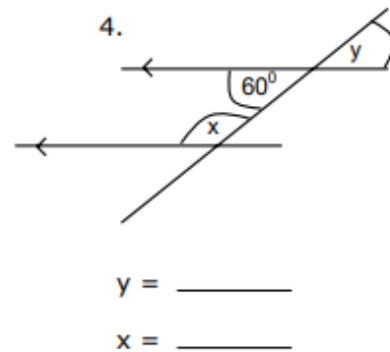
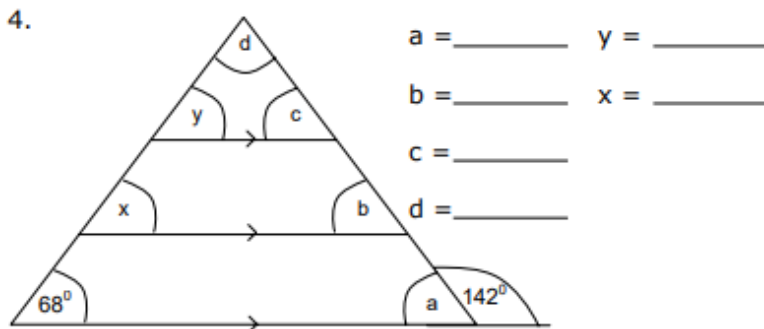
Mark an angle corresponding to •



x = \_\_\_\_\_

y = \_\_\_\_\_

z = \_\_\_\_\_



## Test Yourself

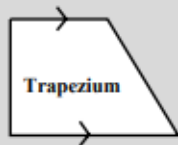
1. To construct an angle of  $60^\circ$ 
  - a. draw a line AB 30mm long
  - b. with compass point on A, draw arc (any radius) to cut AB at C
  - c. with compass point on C, draw arc same radius as b. to cut arc at D
  - d. join AD
  - e.  $\widehat{DAC}$  is always exactly  $60^\circ$

# 6 Quadrilaterals

**i** A **quadrilateral** is a figure with four sides. Some quadrilaterals have special properties and special names.

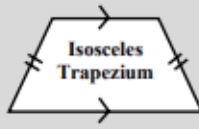


Quadrilateral



Trapezium

2 sides parallel

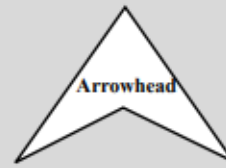


Isosceles Trapezium

2 sides parallel  
2 sides equal



Kite

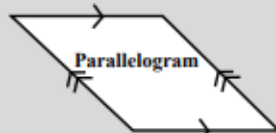


Arrowhead



Rectangle

Opposite sides equal and parallel



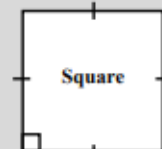
Parallelogram

Opposite sides parallel



Rhombus

All sides equal



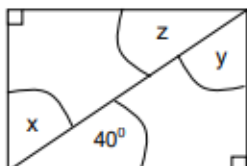
Square

All sides equal  
All angles  $90^\circ$

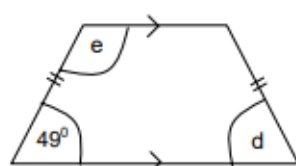
Note: The inside (interior) angles of all quadrilaterals add up to  $360^\circ$ .

## Try These

Find the marked angles in these quadrilaterals. (These are not drawn to scale).

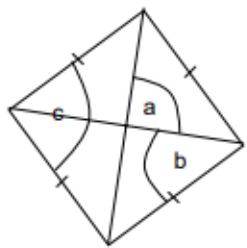
1.  x = \_\_\_\_\_  
y = \_\_\_\_\_  
z = \_\_\_\_\_

Rectangle

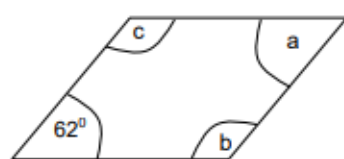
3.  d = \_\_\_\_\_  
e = \_\_\_\_\_

Isosceles Trapezium

Hint: use symmetry

2.  a = \_\_\_\_\_  
b = \_\_\_\_\_  
c = \_\_\_\_\_

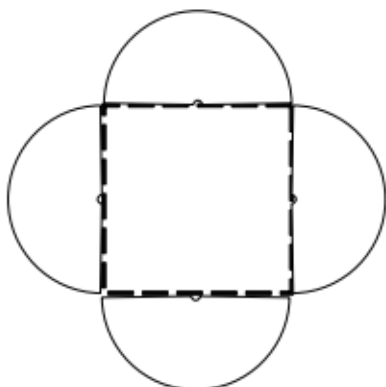
Square

4.  a = \_\_\_\_\_  
b = \_\_\_\_\_  
c = \_\_\_\_\_

Parallelogram

## Test Yourself (1)

Use your ruler and compass to make a special square greeting card. Draw a square with 80mm sides and draw a semi-circle with a radius of 40mm on each side of the square. Fold the sides of the square inwards and tuck under each flap. If you use attractive paper and double thickness you can slip a card or pressed flower in between the two pieces. Or trace the pattern on p75.



## Test Yourself (2)

Trace and cut out the pieces on resource pages 76 and 77. Use these pieces to make squares and triangles as directed.