Maps

Activity 7.1

1. Use the map to answer the questions.

Survivor map
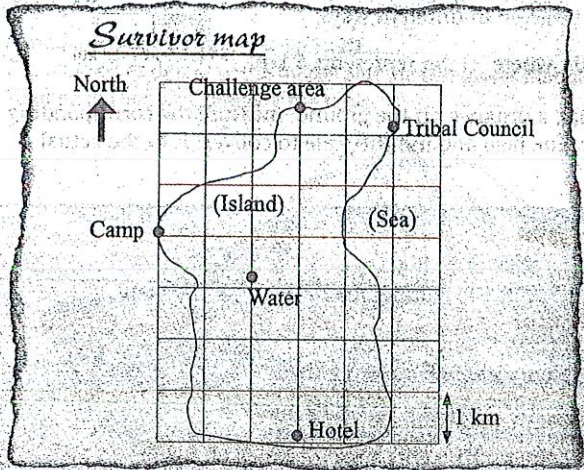
a) Which place is East of the Tribal Council?

b) Approximately how far is the hotel from the challenge area?

c) Where would you be if you moved North from the hotel three blocks and then West one block?

d) Where would you be if you move three blocks to the East from the camp and then North three blocks?

e) Describe the shortest route from the water to the camp travelling along the grid lines and remaining on the island.

Example

A map has a scale of 1 : 500 000.
What real distance is represented by 2 cm on the map?

Solution

1 cm represents 500 000 cm = 5 km

2 cm represents 10 km

2 cm on the map represents a real distance of 10 km.

Activity 7.2 Distances and maps

30 minutes

1. A model giraffe is made to a scale of 1 : 150.
What does this tell you about:
a) the height of the actual giraffe
b) the height of the model giraffe?
c) the height of the actual giraffe if the model is 3,5 cm tall.

2. A map has the scale:

Use the scale bar to determine:
a) how many centimetres on the map represent an actual distance of:
   i) 20 m
   ii) 50 m
   iii) 100 m
b) how many metres on the ground are represented on the map by:
   i) $\frac{1}{2}$ cm
   ii) 8 cm
   iii) 20 cm

3. A map has a scale of 2 cm representing 1 km.
If two villages are 8 cm apart on the map, what is the actual distance between the villages?

Exercise

... map of a shopping centre.

a) If you are facing the sports shop, which shop is directly to the left of the sports shop?

b) Describe the position of the coffee shop in relation to the grocery store in terms of North, South, East or West.

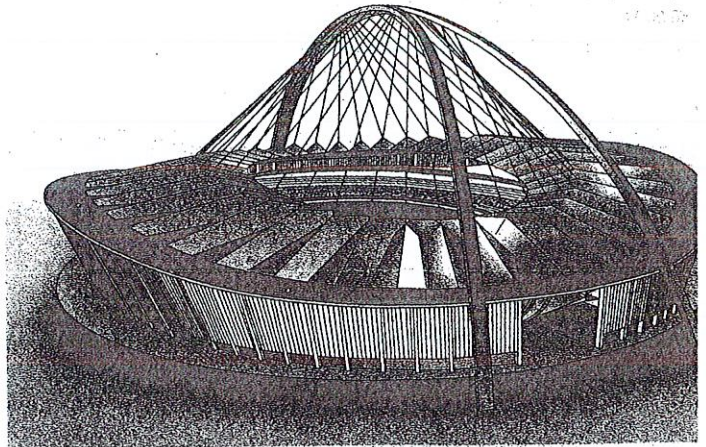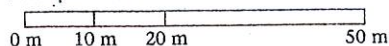c) If you are travelling south along Main Road, would the parking be on your left or on your right?

4. A map has a scale of 1 : 400.
Calculate the real distances represented on the map by:
a) 8 cm
b) $2\frac{1}{2}$ cm

5. A model is made using the scale 1 : 20.
The table gives details of the model and the real Moses Mabhida Sport Stadium in Durban. Complete the table.

A model of the Moses Mabhida Sport Stadium in Durban.

		Model	Real stadium
a)	length of the field	600 cm	
b)	height of the stadium		30 m
c)	height of entrance gate	20 cm	
d)	width of entrance gate		5 m
e)	width of field	450 cm	
f)	number of seats		70 000

6. A map has dimensions 25 cm by 37,5 cm.

The scale printed on it is 1 : 2 000.

The map is reduced in size to fit a space of 10 cm by 15 cm in a book.
a) How must the scale of the map in the book be adapted?
b) What are the dimensions on the map of the rectangular area on the ground?

GEOMETRY OF 2D SHAPES

TRIANGLES

1. Triangle → shape with 3 sides and 3 angles.

2. Scalene triangle → no equal sides, no equal angles.
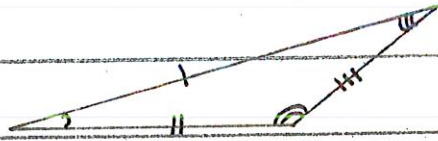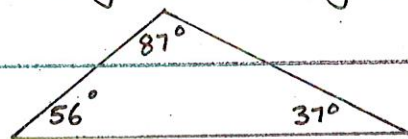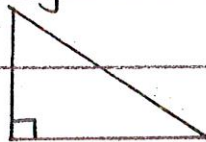
3. Isosceles triangle → 2 equal sides, 2 equal angles.

4. Equilateral triangle → 3 equal sides, 3 equal angles.
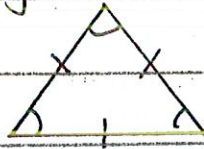
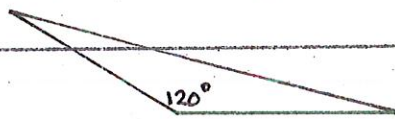5. Acute-angled triangle → all angles are less than $90°$.

6. Right-angled triangle → one angle is $90°$.

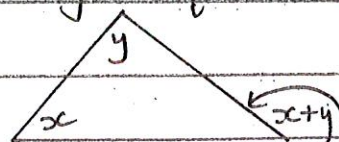7. Obtuse-angled triangle → one angle is greater than $90°$.
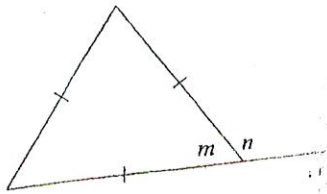
8. The sum of the angles of a triangle is $180°$.

$$\hat{A} + \hat{B} + \hat{C} = 180°$$

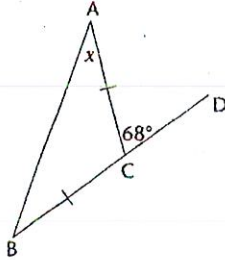9. The exterior angle of a triangle equals the sum of the interior opposite angles.

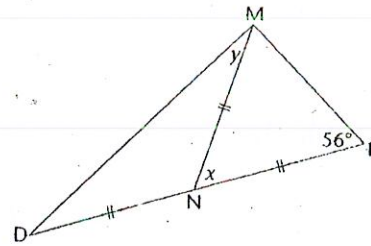5. Angle m and n form a straight angle. Calculate the size of m and n.
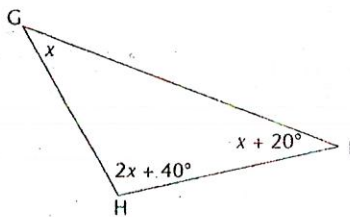

8. Calculate the size of $\hat{N}$.

9. DNP is a straight line. Calculate the size of x and y.

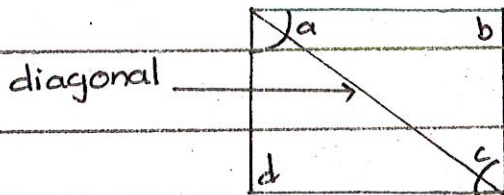6. BCD is a straight line segment. Calculate the size of x.

7. Calculate the size of x and then the size of $\hat{H}$.

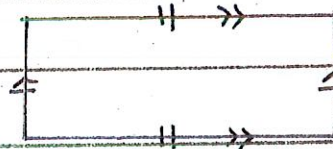## QUADRILATERALS

1. Quadrilateral → shape with 4 sides and 4 angles.

2. Diagonal divides a quadrilateral into 2 triangles.

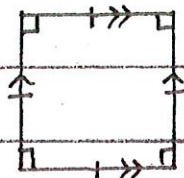3. The angles of a quadrilateral add up to $360°$.

diagonal

$$a + b + c + d = 360°$$

4. Equal sides are marked with equal number of strokes.

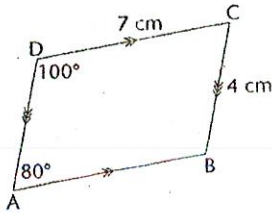5. Parallel lines are marked with equal number of arrows.

6. Square → 4 equal sides and 4 equal angles ($90°$).

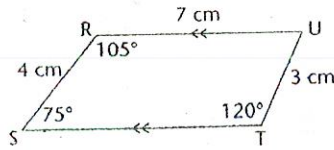→ opposite sides are parallel.

Ex: 11.3

Find the length of all the **unknown sides** and **angles** in the following quadrilaterals.
Give reasons to justify your statements. (Also recall that the sum of the angles of a
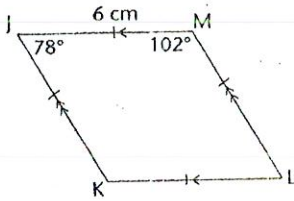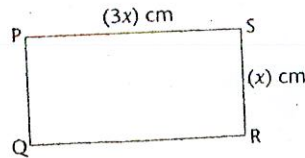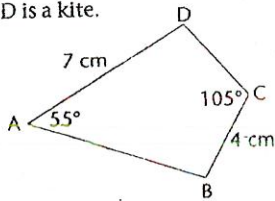quadrilateral is 360°.)

1.

D — 7 cm — C
100°
4 cm
80° — B
A

4. The perimeter of RSTU is 23 cm.

R — 7 cm — U
105°
4 cm
3 cm
75° — 120°
S — T

2.

J — 6 cm — M
78° 102°
K — L

5. PQRS is a rectangle and has a perimeter of 40 cm.

P — (3x) cm — S
(x) cm
Q — R

3. ABCD is a kite.

D
7 cm
A 55° 105° C
4 cm
B

CONGRUENCY

1. Congruent → identical shapes → same shape and size.

→ corresponding sides and angles are equal.

eg:

△ ABC ≡ △ DEF :

AB = DE

BC = EF

AC = DF

$\hat{A} = \hat{D}$

$\hat{B} = \hat{E}$

$\hat{C} = \hat{F}$