Strathaven Academy

Level 3 – Unit 5

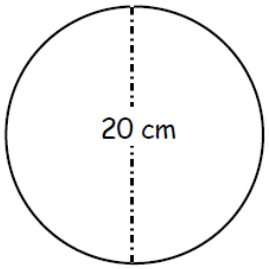
Homework – No Answers

- Circles
- Quadrilaterals
- Special Numbers
- Drawing Triangles

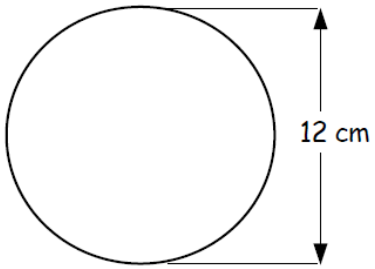
Circles

1. Calculate the circumference of the circles shown below.

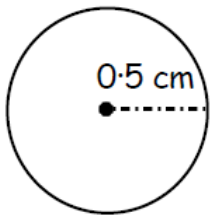
a)



b)



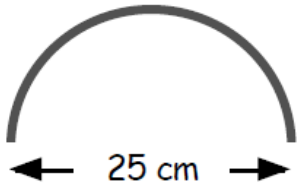
c)



2. Bert buys a stick of licorice and bends it into the shape of a **semi-circle**.

The diameter of the semi-circle is 25 centimetres.

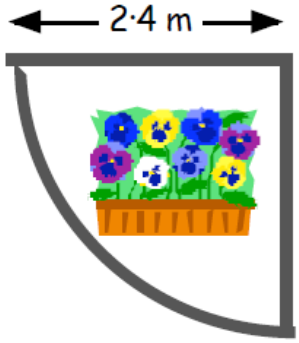
Calculate the length of the licorice stick.



3. Terry plans to use wooden logs to make a border around the part of his garden he uses for bedding plants.

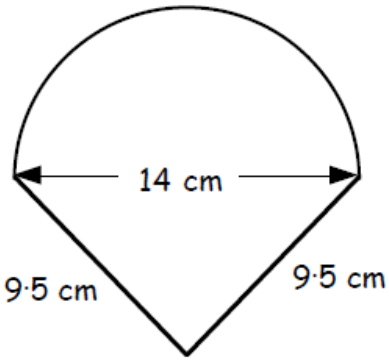
This part of Terry's garden is in the shape of a quarter-circle with radius 2·4 metres.

Calculate the TOTAL length along which he needs to lay the logs.

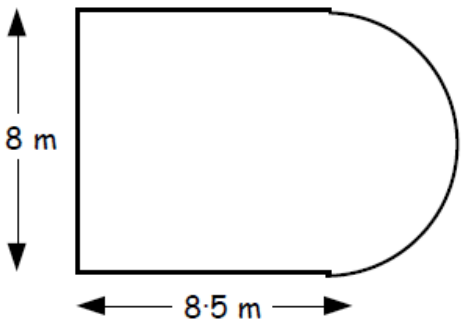


4. Calculate the **PERIMETER** of each of these shapes :-

(a)



(b)



5. The diameter of the wheel on the wheelbarrow is 40 cm.

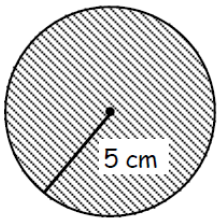
(a) Calculate the circumference of the wheel in centimetres.

(b) To completely cross a lawn, the wheel on the barrow turns 25 times. Calculate the length of the lawn (in metres).

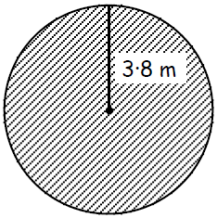
Circles

6. Calculate the area of the circles shown below.

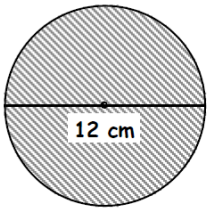
a)



b)

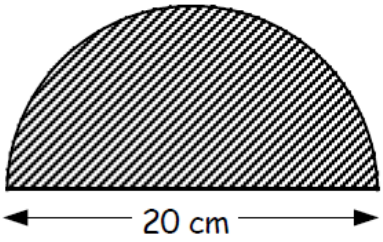


c)



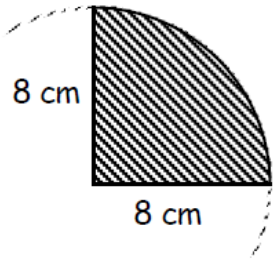
7. The DIAMETER of this "No Left Turn" sign is 47·1 cm.
Calculate the radius and the area of the sign.

8.

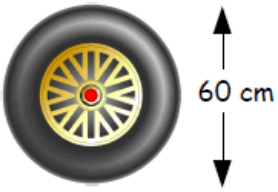


Calculate the area of this semi-circle with diameter 20 cm.
(*Imagine it was a whole circle to begin with*).

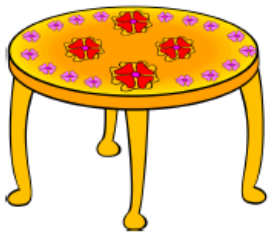
9. Calculate the area of this quarter-circle,
by imagining a whole circle first.



10. This tyre has a **diameter** of 60 cm.
Calculate its **circumference**.

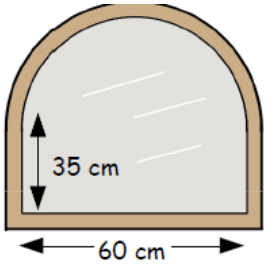


11.



The top of this table is a circle with **radius** 20 cm.
Calculate the **area** of the table top.

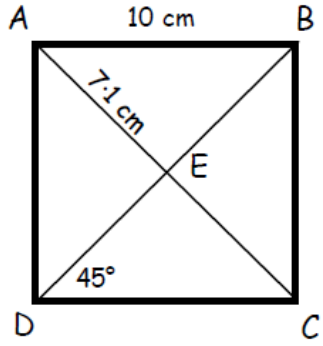
12.



This mirror has a wooden frame.
The glass is in the shape of a rectangle with a semi-circle on top.
Calculate the **area** of the glass.

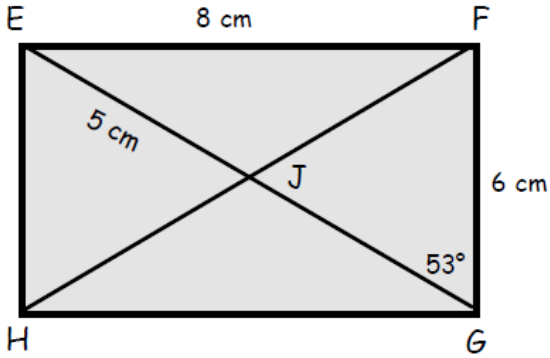
Quadrilaterals

1. (a) Make a neat sketch of the square shown.
   (b) Fill in the sizes of every side and angle.



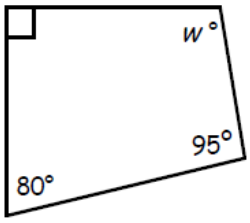
2. A square has a perimeter of 20 cm.
   Calculate the length of a side.

3. (a) Make a neat sketch of the rectangle shown.
   (b) Fill in the sizes of every side and angle.

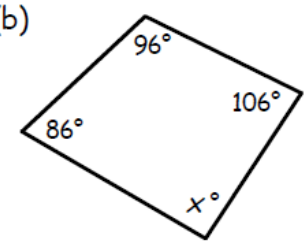


4. Calculate the values of w, x, y and z in the following quadrilaterals :-

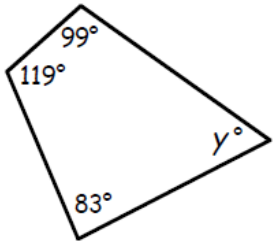
(a)



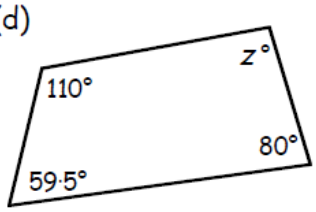
(b)



(c)

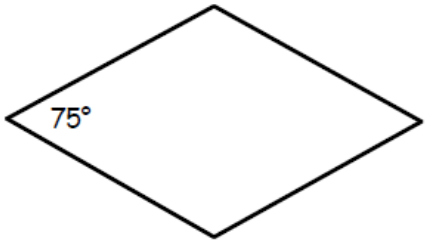


(d)

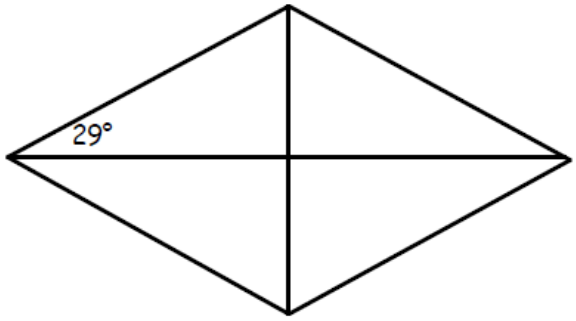


5. Sketch each of the following rhombii and fill in the sizes of all the missing angles :-

(a)



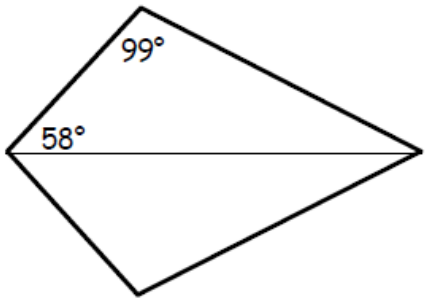
(b)



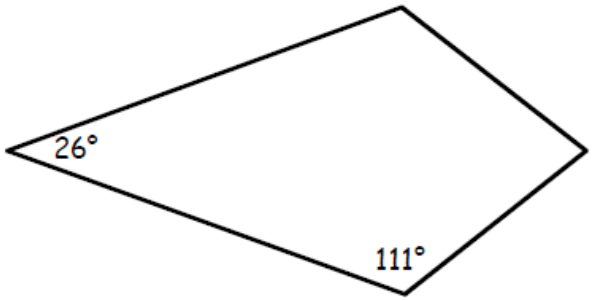
Quadrilaterals

6. Sketch each of the following kites and fill in the sizes of the missing angles :-

(a)

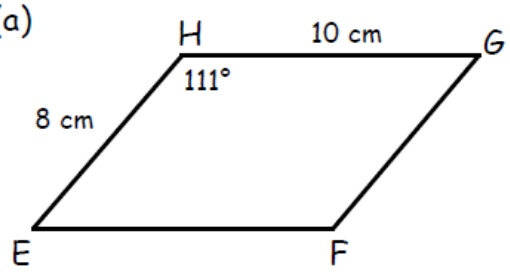


(b)

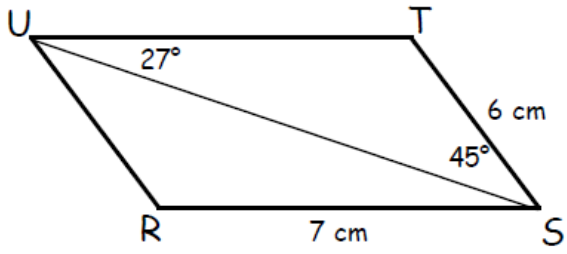


7. Sketch each of the following parallelograms and fill in the sizes of all angles and sides :-

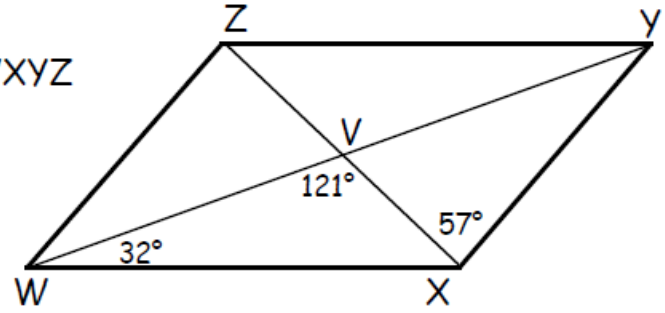
(a)



(b)

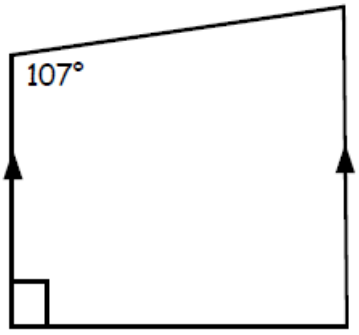


8. Make a largish sketch of parallelogram WXYZ and fill in the sizes of all of its angles.

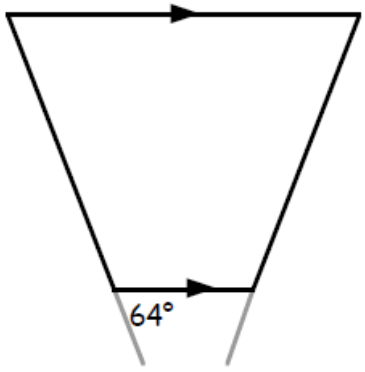


9. Sketch each of the following trapezia and fill in all the sizes of the missing angles :-

(a)



(b)



Special Numbers – Multiples and Factors

1. Write down the :-

a first five **common multiples** of 3 and 4.

b **lowest common multiple** (l.c.m.) of 3 and 4.

2. Write down the **lowest common multiple** (l.c.m.) of :-

a	3 and 5	**b**	9 and 12	**c**	11 and 12
d	1, 2 and 3	**e**	3, 4 and 5	**f**	3, 4, 5 and 6.

3. Write down the :-

a **common factors** of 8 and 12

b **highest common factor** (h.c.f.) of 8 and 12.

4. Write down the **highest common factors** (h.c.f.) of :-

a	10 and 20	**b**	12 and 20	**c**	24 and 60
d	15 and 27	**e**	39 and 51	**f**	100 and 129.

5. **a** Write down three numbers that have exactly **two** factors.

b Write down two numbers with exactly **three** factors.

c Write down a number with only **one** factor.

d Find a number which is a **multiple** of 48 **and** a **factor** of 48.

6. **a** What is the **lowest common multiple** of the numbers 2, 3, 4, 5, 6 and 7 ?

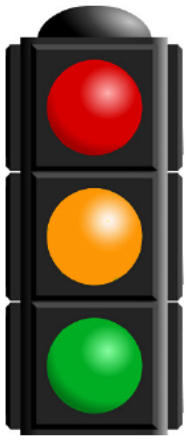
b What is the **highest common factor** of the numbers 95, 96, 97, 98 and 99 ?

7. Three faulty traffic lights, red, orange and green, all flash at the same time.

After this time :- the **red** light flashes every 3 seconds

the **green** light flashes every 4 seconds and

the **orange** light flashes every 6 seconds.



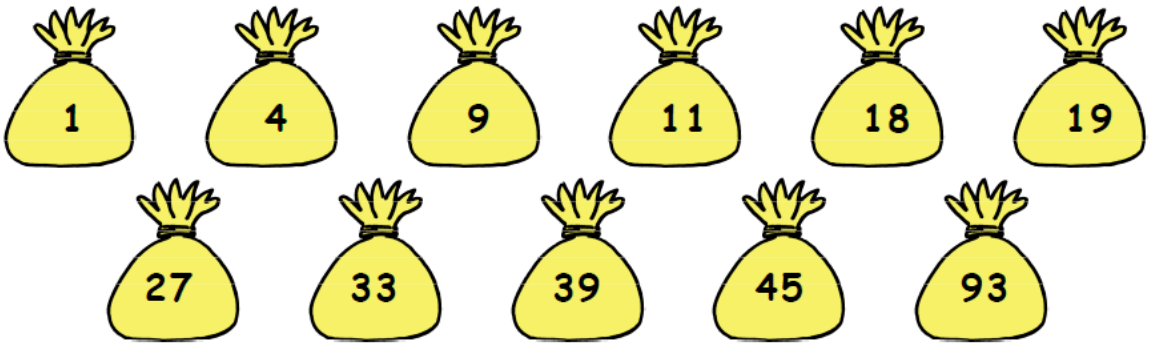
a When is the next time all three lights will flash at the same time ?

b Will the lights all flash at the same time after exactly 4 minutes ? (Explain your answer).

Special Numbers – Prime Numbers

1. How many **factors** does a **prime** number have ?

2. Which of these bags have **prime** numbers written on them ?



3. Write down **all** the **prime** numbers between :-

   a 30 and 40 **b** 60 and 70 **c** 100 and 110.

4. Write down ***TRUE*** or ***FALSE*** for each of the following statements :-

   a **Every** odd number is a prime number.

   b There are **no** prime numbers which are even numbers.

   c There are **four** prime numbers between 10 and 20.

   d One thousand eight hundred and sixty five is **NOT** a prime number.

5. Write down which of the following are **prime** numbers :-

   a 135 792 **b** three million **c** one million, minus one.

6. **a** Write down the **highest common factor** (h.c.f.) of 13 and 19.

   b Make a statement about the **highest common factor** of **ANY** two prime numbers.

7. Write each of the following numbers as the **product** of **prime factors** :-
   (*For example, 18 = 2 x 3 x 3 or 50 = 2 x 5 x 5*).

   a 12 **b** 30 **c** 91 **d** 500.

Special Numbers – Powers and Roots

1. Find the **area** of the square shown.

2. Find the **area** of a square with side :-

a 8 mm **b** 20 m **c** 1 cm.

3. Find :-

a 3^2 **b** 5^2 **c** 10^2

d 11^2 **e** 1000^2 **f** 30^2.

4. Find :-

a 2^3 **b** 2^5 **c** 10^3

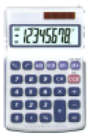
d 3^5 **e** 10^6 **f** 1^{13}.

5. Find :-

a $\sqrt{36}$ **b** $\sqrt{49}$ **c** $\sqrt{81}$

d $\sqrt{1}$ **e** $\sqrt{10000}$ **f** $\sqrt{225}$.

You may use a calculator for questions 6 to 9.



6. Calculate the **area** of a square with side :-

a 27 cm **b** 1·8 m **c** 0·2 km.

7. Find :-

a 14^2 **b** $3{\cdot}8^2$ **c** $1{\cdot}05^2$

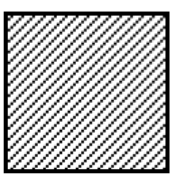
d 5^{10} **e** 15^5 **f** $1{\cdot}35^4$.

8. Find the following and write your answers to **2 decimal places**.

a $\sqrt{13}$ **b** $\sqrt{1876}$ **c** $\sqrt{0{\cdot}1}$.

9. A square has an **area** of 210·25 square centimetres.

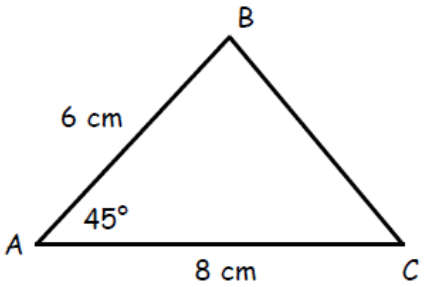
Find the length of a side of the square.



Drawing Triangles

a Draw **triangle** ABC accurately on your answer paper.

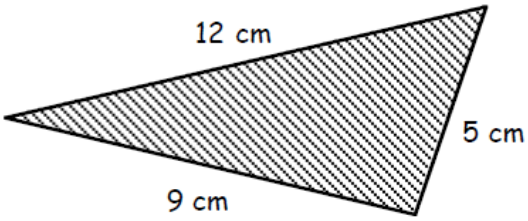
b Measure and write down the size of line BC.



a Draw accurately a **triangle** named PQR where :-

PQ = 10 cm ∠QPR = 35° ∠PQR = 55°.

b Measure and write down the size of line PR.



A sketch of a triangle with its sides given is shown.

a Make an accurate drawing of this triangle.

b Measure and mark in the sizes of its angles.

Strathaven Academy

Level 3 – Unit 5

Revise and Review

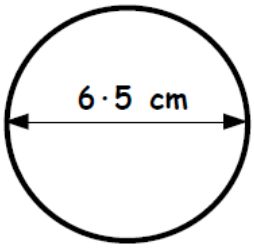
- Circle
- Quadrilaterals
- Special Numbers
- Drawing Triangles

This section provides further examples that may be used to revise prior to the Unit 5 Test or for consolidation and review as required on completion of the unit.

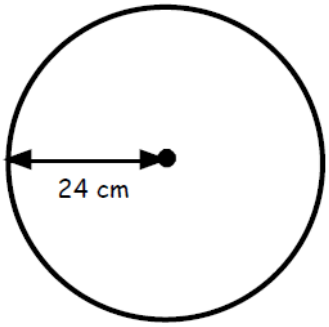
Answers are provided to check work.

Circles

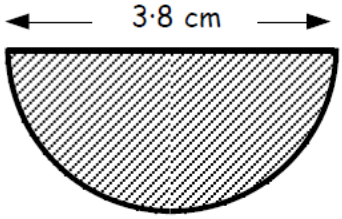
1. Calculate the circumference of this circle with diameter 6·5 cm.



2. Work out the circumference of a circle with radius 24 cm.



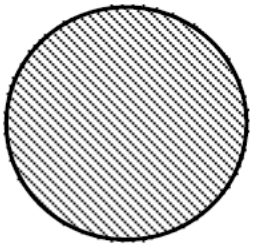
3. Calculate the perimeter of this shape :-



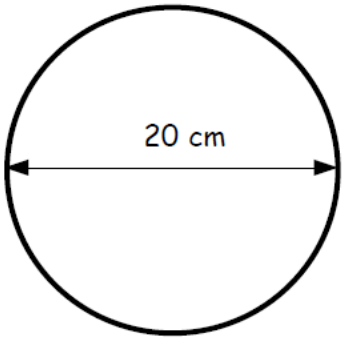
4. A circle has a circumference of 125·6 mm.

Calculate its :-

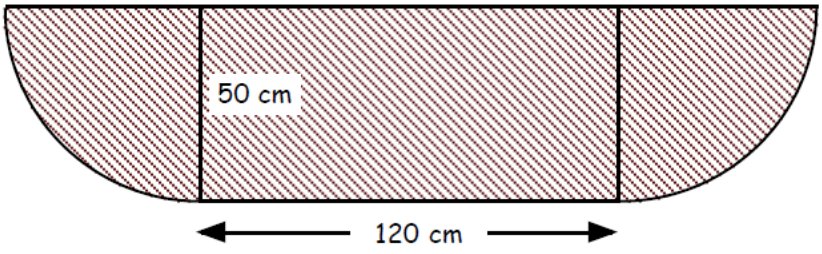
(a) diameter (b) radius.



5. Calculate the area of a circle with **diameter** 20 cm.



6. Work out the total area of this shape :-



Quadrilaterals

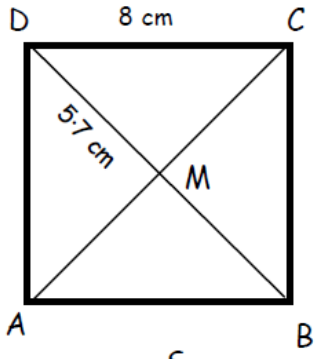
1. Write down as many properties as you can for a :-

   (a) square (b) rectangle (c) rhombus

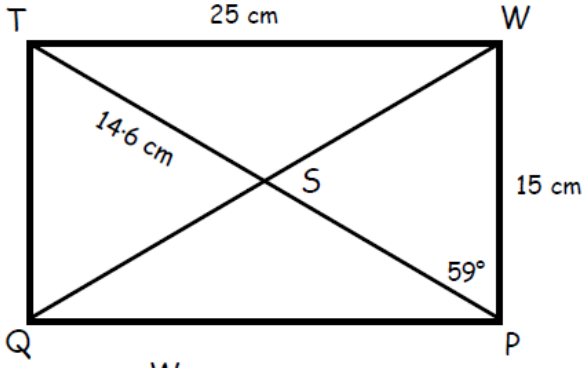
   (d) kite (e) parallelogram (f) trapezium.

2. Sketch each of the following and fill in the sizes of as many angles and sides as possible :-

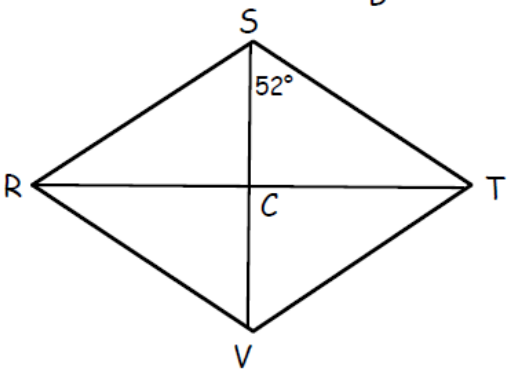
(a)



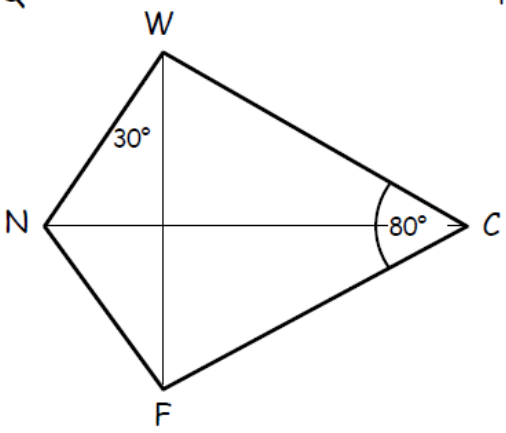
(b)



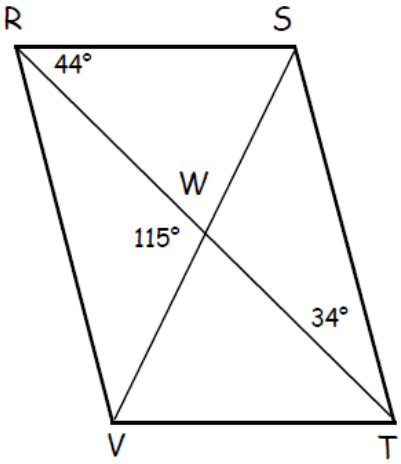
(c)



(d)



(e)



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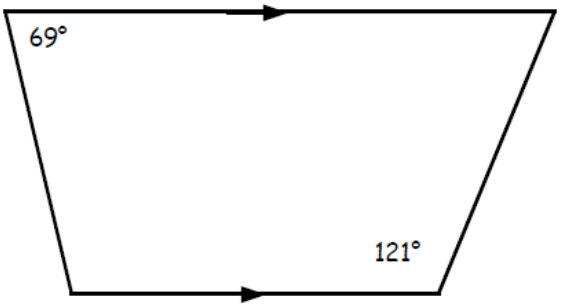


Special Numbers

1. (a) List all the multiples of 8 between 30 and 60.

   (b) List all the multiples of 3 between 80 and 100.

2. Find the lowest common multiple of :-

   (a) 4 and 6 (b) 5 and 8 (c) 3 and 7

   (d) 2, 3 and 6 (e) 3, 5 and 9. (f) 2, 3, 4 and 5.

3. List all the factors of :-

   (a) 18 (b) 29 (c) 32.

4. List the highest common factor of :-

   (a) 9 and 15 (b) 100 and 225 (c) 12, 20 and 36.

5. List all the prime numbers between :-

   (a) 10 and 20 (b) 60 and 70 (c) 80 and 90.

6. Find the prime factors of :-

   (a) 33 (b) 125 (c) 360.

7. Find :- (a) 8^2 (b) 100^2 (c) $\sqrt{100}$ (d) $\sqrt{12}$.

Drawing Triangles

Make accurate drawings of the following triangles.

1. ΔABC where $AB = 10$ cm, $BC = 6$ cm and $\angle ABC = 70°$.

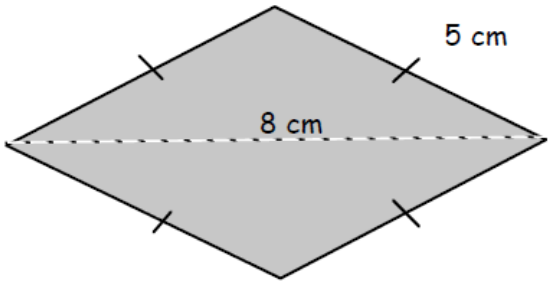
2. ΔPQR where $PQ = 9$ cm, $\angle PQR = 50°$ and $\angle QPR = 40°$.

3. ΔSTY where $ST = 8$ cm, $\angle STY = 10°$ and $\angle TSY = 150°$.

4. ΔJKL where $JK = 11$ cm, $JL = 14$ cm and $KL = 2$ cm.

5. A rhombus is made from two iscoceles triangles as shown.

   Make an accurate drawing of this rhombus.

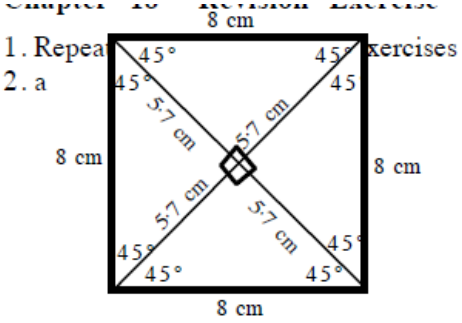


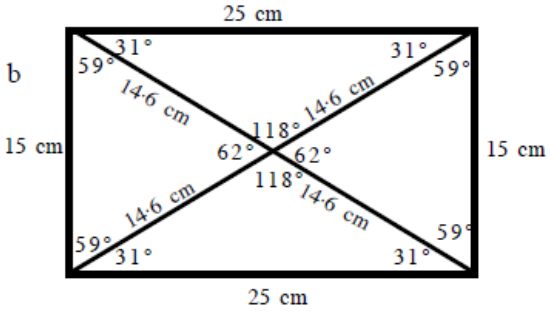
Answers

Circle

1. 20·41 cm
2. 150·7 cm
3. 9·77 cm
4. a 40 mm b 20 mm
5. 314 cm^2
6. 9925 cm^2

Quadrilateral





Special Numbers

1. a 32 40 48 56
   b 81 84 87 90 93 96 99
2. a 12 b 40 c 21
   d 6 e 45 f 60
3. a 1 2 3 6 9 18 b 1 29
   c 1 2 4 8 16 32
4. a 3 b 25 c 4
5. a 11 13 17 19 b 61 67
   c 83 89
6. a 3 x 11 b 5 x 5 x 5
   c 2 x 2 x 2 x 3 x 3 x 5
7. a 64 b 10 000 c 10 d 3·46