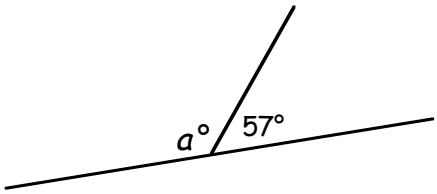
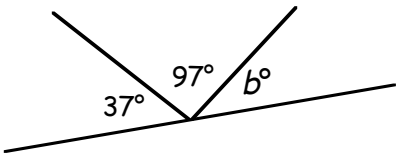
Chapter 3

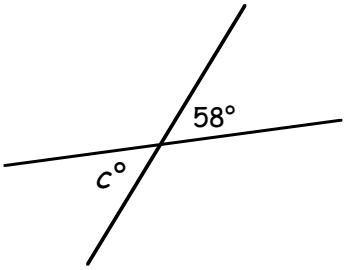
Angles

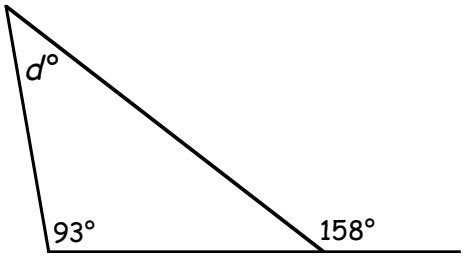
Exercise 1

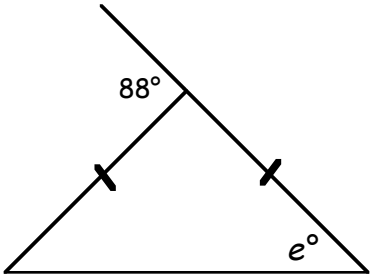
1. Calculate the sizes of the angles marked a, b, c, d, e and f.

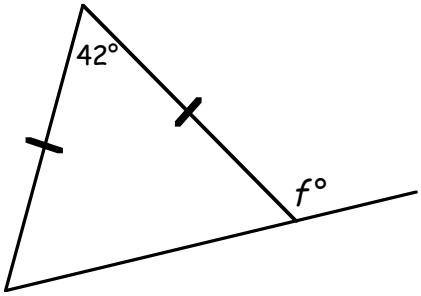






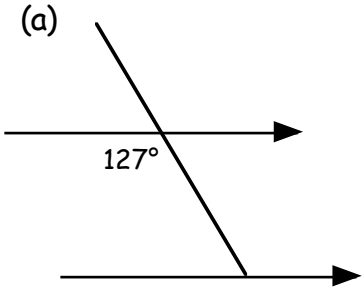




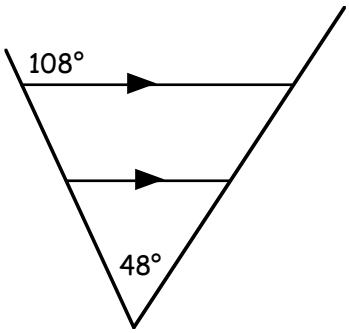


2. **COPY** each of the following and fill in the sizes of **all** the missing angles :-

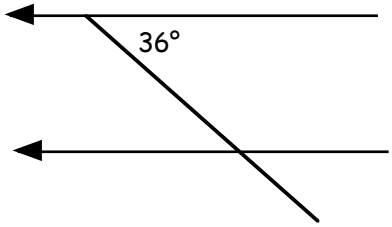
(a)



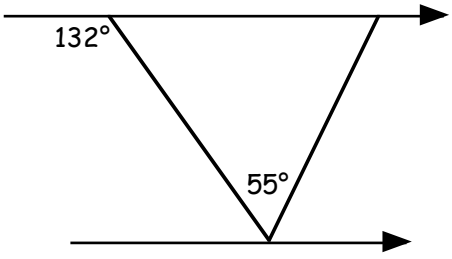
(b)



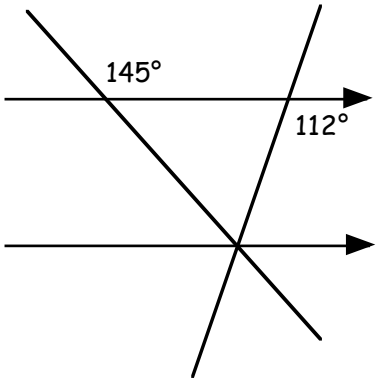
(c)



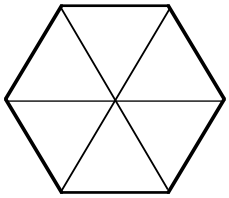
(d)



(e)



Exercise 2



1. What is the name of a regular polygon which has :-

   (a) 5 sides (b) 6 sides (c) 7 sides

   (d) 8 sides (e) 9 sides (f) 10 sides ?

2. The formula for finding the **interior** angles of a regular polygon, given the number of sides (n), is :-

   interior angle = $180 - (360 \div n)$.

   Use the formula to find the size of the interior angles of a regular :-

   (a) pentagon (b) nonagon (c) 20 sided polygon.

3. The formula shown below is used to calculate the size of the exterior angles of a regular polygon.

   exterior angle = 180° – **interior** angle

   Use the above formula to calculate the size of the **exterior** angle of :-

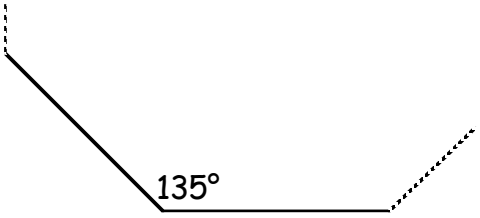
   (a) a regular pentagon.

   (b) a regular nonagon.

   (c) a regular decagon.

4. (a) An interior angle of a regular polygon is found to be 135°.

   What is the regular polygon called ?



   (b) An exterior angle of a regular polygon is found to be 60°.

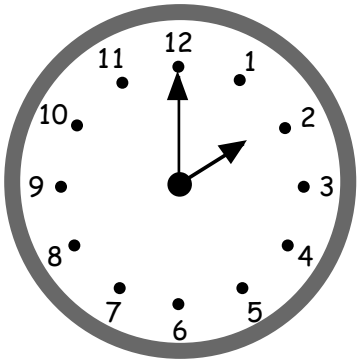
   What is the regular polygon called ?

Exercise 3

1. (a) How many degrees are there in 1 full turn ?

   (b) How many hours are there on the face of this clock ?

   (c) What is the size of the angle between the 12 and the 2 on this clock ?



2. What is the size of the (smaller) angle between the hands of a clock at :-

   (a) 1 o'clock (b) 3 o'clock (c) 7 o'clock

   (d) 8 o'clock (e) 9 o'clock (f) 11 o'clock ?

3. Calculate the size of the (smaller) angle between the hands of a clock at :-

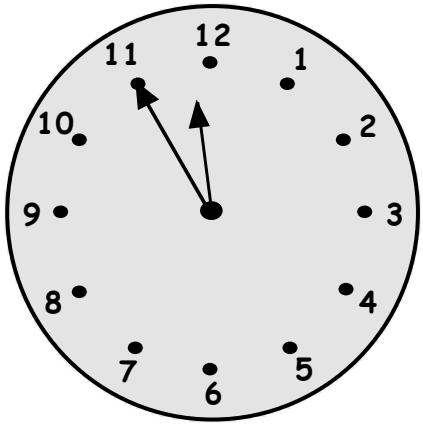
   (a) half past four (b) half past 10 (c) 1.30

   (d) 11.30 (e) half past 9 (f) 8.30.

4. Calculate the size of the acute angle between the hands of a clock at :-

   (a) quarter past 4 (b) quarter past 6.

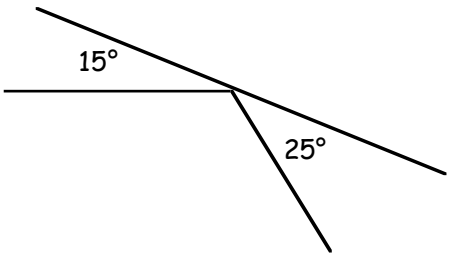
5. Calculate the size of the **acute** angle between the hands of a clock at 5 minutes to midnight.
   (**Difficult** !)



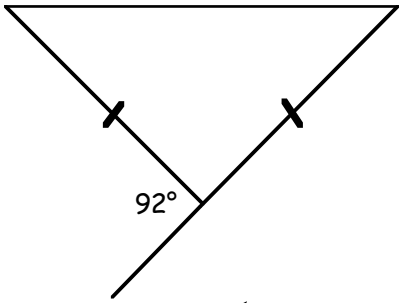
Revision Exercise

1. **COPY** each of the following and fill in the sizes of **all** the missing angles :-

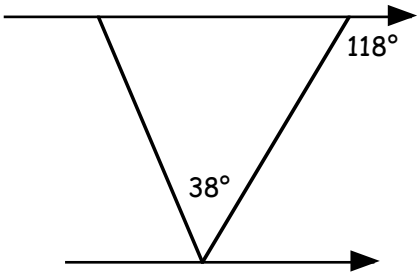
(a)



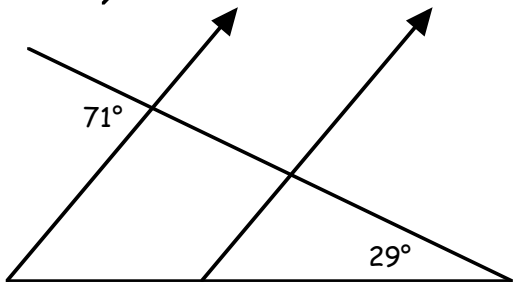
(b)



(c)



(d)



2. How many sides has a regular :-

(a) pentagon (b) heptagon (c) nonagon ?

3. Calculate the size of the **interior** angles of a regular :-

(a) hexagon (b) octagon (c) decagon.

4. Calculate the size of the **exterior** angles of a regular :-

(a) pentagon. (b) duodecagon (12 sides). (c) 20 sided polygon.

5. (a) An interior angle of a regular polygon is found to be 108°.
What is the regular polygon called ?

(b) An exterior angle of a regular polygon is found to be 120°.
What is the regular polygon called ?

6. What is the size of the (smaller) angle between the hands of a clock at :-

(a) 4 o'clock (b) 5 o'clock (c) 10 o'clock

(d) half past three (e) 7.30 (f) 10.30

(g) quarter to eight (h) quarter past twelve ?