Solutions by
Kenneth Stafford
MATHS TUTOR
ken@kennethstafford.co.uk

GCSE (9-1) Grade 4 Angles in Polygons

Instructions

Use **black** ink or ball-point pen.
Fill in the boxes at the top of this page with your name.
Answer **all** questions.
Answer the questions in the spaces provided
– there may be more space than you need.
Show all your working out

Information

The marks for **each** question are shown in brackets.
Use this as a guide as to how much time to spend on each question.
Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed

Advice

Read each question carefully before you start to answer it
Attempt every question
Check your answers if you have time at the end

1. Each exterior angle of a regular polygon is 30°.

Work out the number of sides of the polygon.

$\frac{360}{30} = 12$

.....

(2 marks)

2.

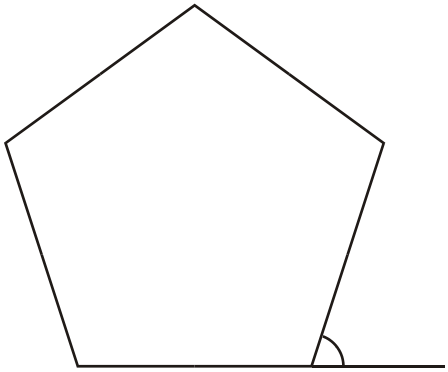


Diagram **NOT** accurately drawn

Work out the size of an exterior angle of a regular pentagon.

$\frac{360}{5} = 72°$

.....

(2 marks)

3.

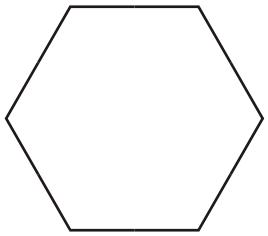


Diagram **NOT** accurately drawn

Calculate the size of the exterior angle of a regular hexagon.

$\frac{360}{6} = 60°$

.....

(2 marks)

4. The size of each exterior angle of a regular polygon is 40°.

Work out the number of sides of the regular polygon.

$\frac{360}{40} = 9$

.....

(2 marks)

5. The size of each interior angle of a regular polygon is 156°.
Work out the number of sides of the polygon.

$180 - 156 = 24$

$\frac{360}{24} = 15$

.....

(3 marks)

6. Here is a regular polygon with 9 sides.

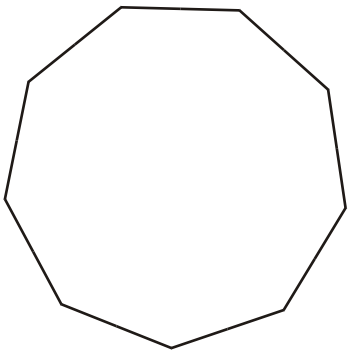


Diagram **NOT** accurately drawn

Work out the size of an exterior angle.

$\frac{360}{9} = 40$

..... °

(2 marks)

7.

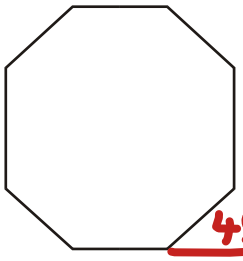


Diagram **NOT** accurately drawn

45

(a) Work out the size of each interior angle of a regular octagon.

$\frac{360}{8} = 45$

$180 - 45 = 135°$

(3)

The size of each exterior angle of a regular polygon is 30^0

(b) Work out the number of sides of the polygon.

$\frac{360}{30} = 12$

(2)

(5 marks)

8.

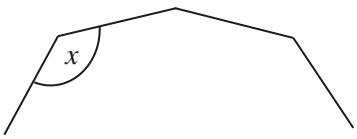


Diagram **NOT** accurately drawn

The diagram shows part of a **regular** 10-sided polygon.

Work out the size of the angle marked x.

$\frac{360}{10} = 36$

$180 - 36 = 144°$

(3 marks)

9.

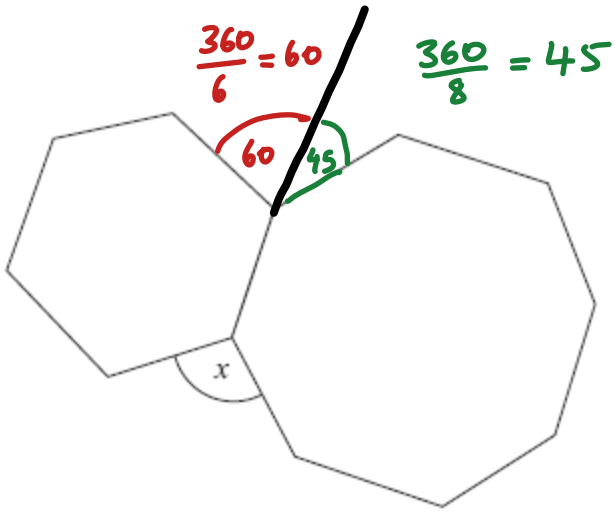


Diagram **NOT** accurately drawn

The diagram shows a regular hexagon and a regular octagon.

Calculate the size of the angle marked x.
You must show all your working.

60 + 45 = 105 .....°

(4 marks)

10.

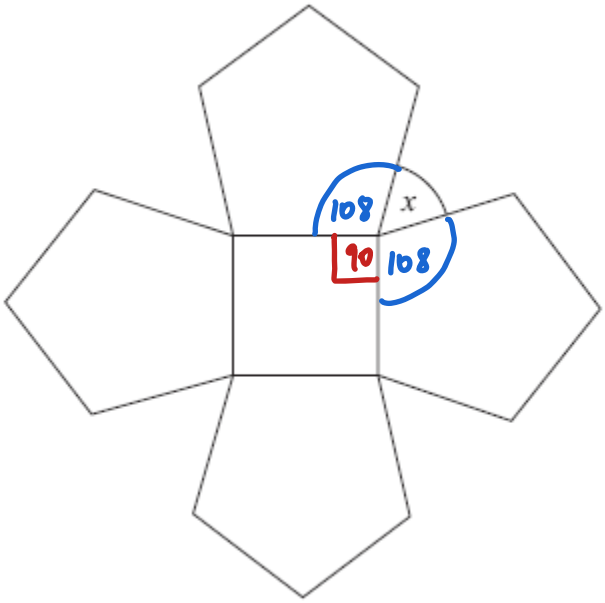


Diagram **NOT** accurately drawn

108
108
+ 90
308
1 1

The diagram shows a square and 4 regular pentagons.

Work out the size of the angle marked x.

$\frac{360}{5} = 72$

$180 - 72 = 108°$

$360 - 308 = 52°$

..... °

(4 marks)

11.

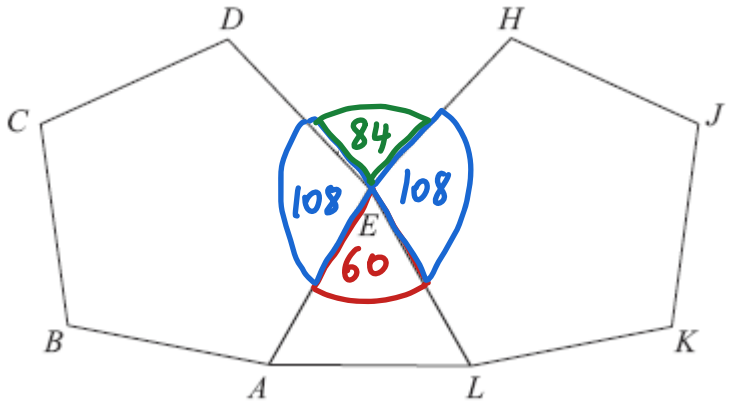


Diagram **NOT** accurately drawn

ABCDE and *EHJKL* are regular pentagons.
AEL is an equilateral triangle.

Work out the size of angle *DEH*.

$\frac{360}{5} = 72$

$180 - 72 = \boxed{108}$

108
108
$+ \ 60$
276
1

$360 - 276 = 84°$

84 .....°

(4 marks)

12. The diagram shows part of a pattern made from tiles.

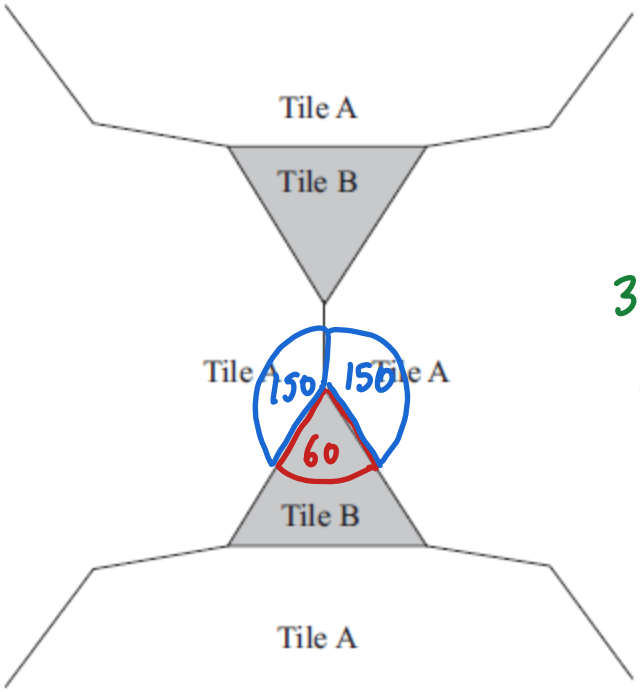


Diagram **NOT** accurately drawn

360 - 60 = 300

$\frac{300}{2} = 150$

The pattern is made from two types of tiles, tile A and tile B.

Both tile A and tile B are regular polygons.

Work out the number of sides tile A has.

Interior = 150°

Exterior = 30°

$\frac{360}{30}$ = 12 sides

(4 marks)