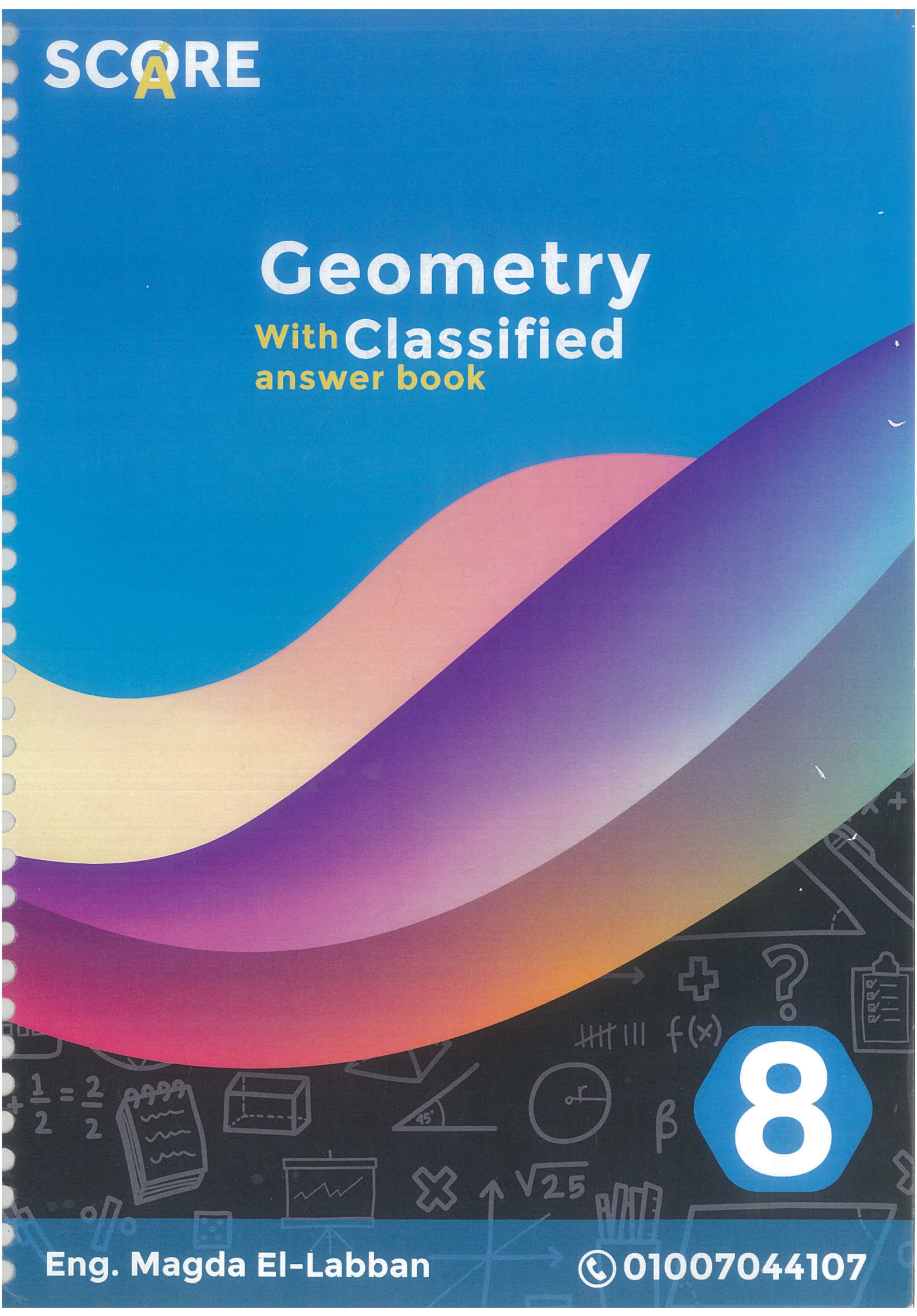
SCORE

Geometry

With Classified answer book



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3- Angles in Polygons

1. Work out the sum of the interior angles of a polygon with

   a 4 sides

   b 8 sides

   c 9 sides.

2. Which of these could be the angles of a quadrilateral?

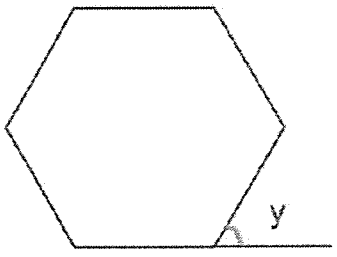
   A 70°, 80°, 90°, 100°

   B 60°, 80°, 90°, 130°

   C 50°, 80°, 105°, 125°

3. Shown below is a regular hexagon, with an exterior angle labeled y.

   Work out the size of angle y.



y = ...°

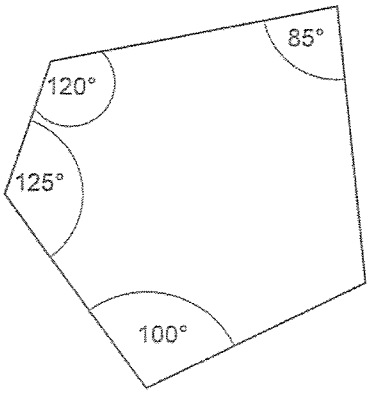
4. Four angles of a pentagon are 115° each.
Work out the size of the fifth angle.

.....°

5. Two angles of a pentagon are 110° each and two angles are 90° each.
Work out the size of the fifth angle.

.....°

6. a) Work out the missing interior angle of this pentagon.



.....°

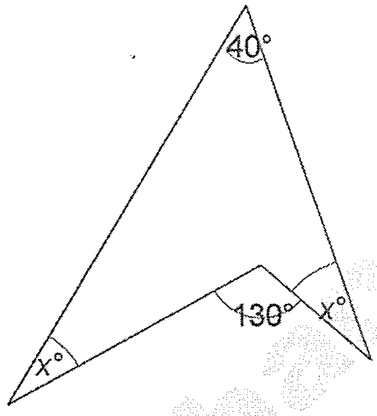
b) Three of the interior angles of a pentagon are 100° each.
Work out the measure of the other equal angles.

.....°

c) Five of the interior angles of a hexagon are 120° each.
Is it a regular polygon?
Give a reason for your answer.

7. This shape has two equal angles.

Work out the value of *x*.



........................°

8. Two angles of a triangle are 45° and 60°.

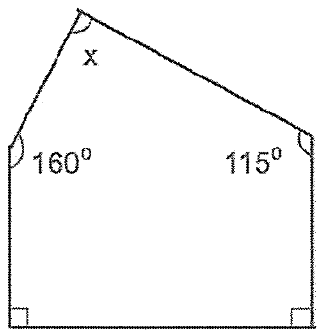
Work out the sizes of exterior angles of the triangle .

........................°

........................°

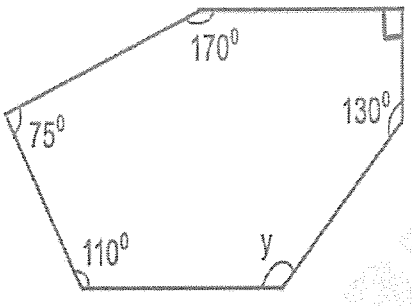
........................°

9. Calculate the size of angle x.



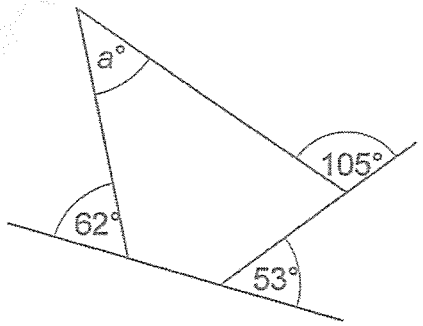
x = ...°

10. Calculate the size of angle y.



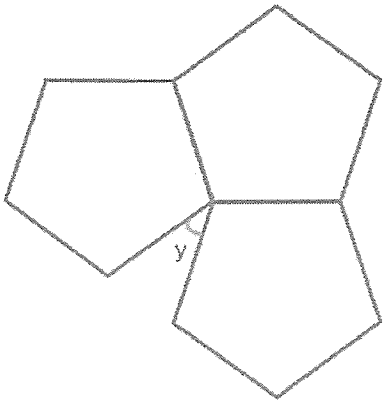
y = ...°

11. Work out the value of a. Explain your method.



a = ...°

12. Three dentical regular pdntagons are joined as shown.Work out the size of angle y.

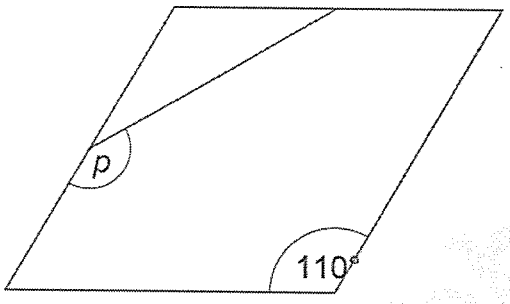


y = ...°

13. The diagram shows a **rhombus**.

The **midpoints** of two of its sides are joined with a straight line.

What is the size of angle *p*?

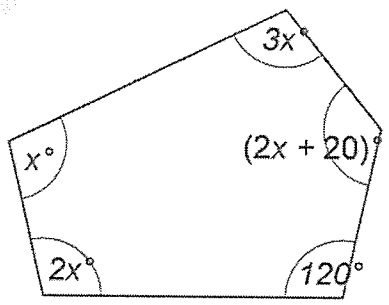


Not drawn accurately

p = _____ °

14. a) Work out the value of x.

x =.....°



b) Work out the largest angle of the pentagon.

.....°

15. The angles of a pentagon are y°, (y +20)°, (y +30)°, (y +40)° and (y +50)°.

a) Work out the value of y.

b) Work out the largest angle of the pentagon.

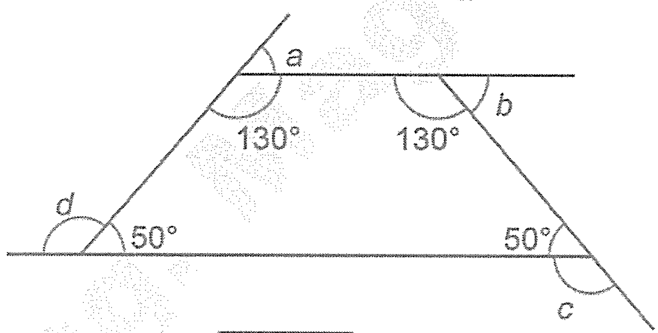
16. Show that it is possible for 2 squares and 3 equilateral triangles to meet at one point.

17. The interior angles of a pentagon are $x°$, $(x + 20)°$, $(x + 20)°$, $(x + 40)°$ and $(x + 40)°$.

Work out the value of x.

18. Work out the size of the exterior angle of each polygon.

Then work out the sum of the exterior angles.



a = ☐

b = ☐

c = ☐

d = ☐

$a + b + c + d$ = ☐

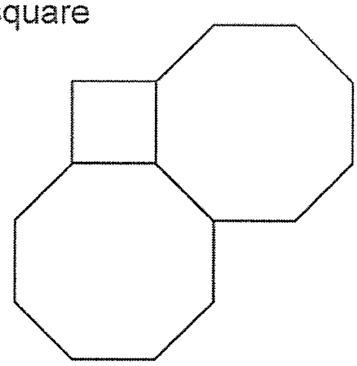
19. Work out the sum of the interior angles for a 40 sided polygon

(a) Each exterior angle of a regular polygon is 15°Work out the number of sides the polygon has. ....°

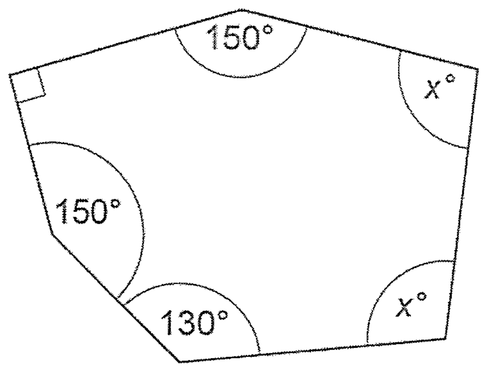
(b) In a different regular polygon each interior angle is 140°. ....
Show that this polygon has 9 sides.

(c) In a different regular polygon each exterior angle is 18°. ....
Find the sum of interior angles for this polygon.

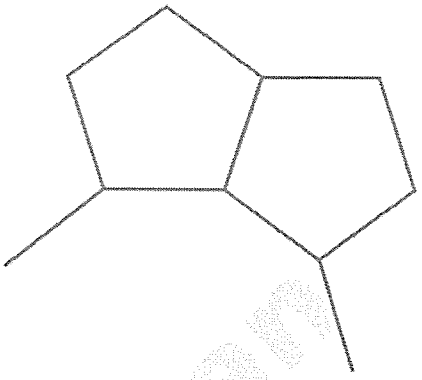
20. Show that it is possible for two regular octagons and a square to fit around a point as shown in the diagram.



21. Calculate the value of x.

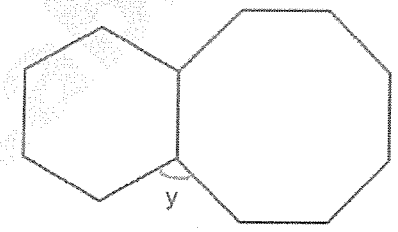


22. This diagram shows two regular pentagons and part of another regular shape arranged around a point.
Show that the third shape is a decagon.

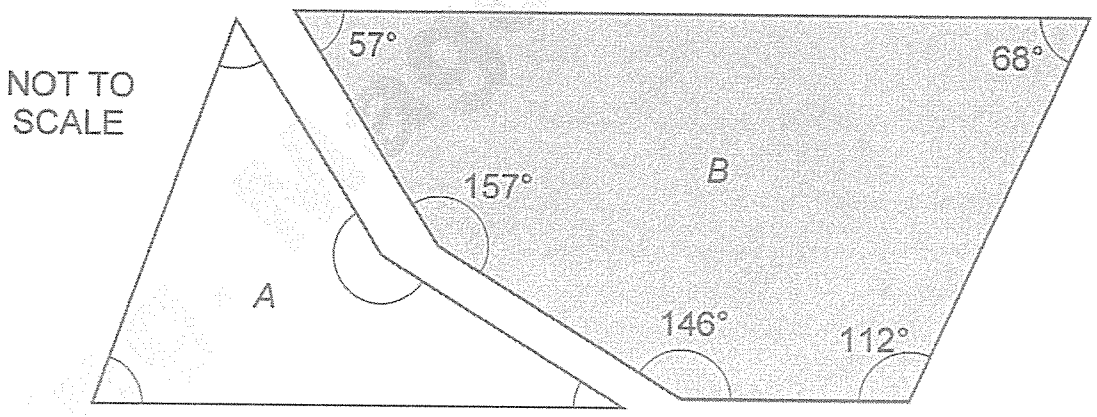


23. Shown is a regular hexagon and a regular octagon.

Calculate the size of angle y.



24. Two shapes A and B fit together to make a parallelogram.



Work out the sizes of the **four** angles in shape *A*.

Write them in the correct places on the diagram.

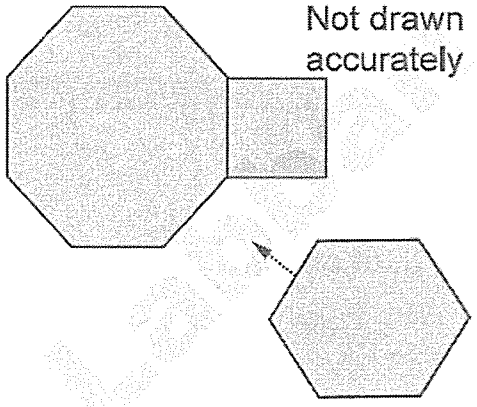
.....°

25. A pupil has three tiles.

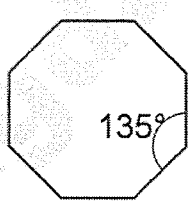
One is a regular octagon, one is a regular hexagon, and one is a square. The side length of each tile is the same.

The pupil says the hexagon will fit exactly like this.

Show calculations to prove that the pupil is **wrong.**



26. Surinder thinks that regular octagons will tessellate.



Is Surinder correct?

Tick (✓) a box. Yes ☐ No ☐

Explain your answer.

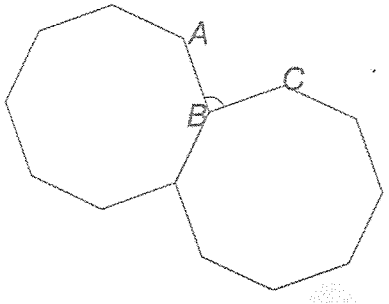
.....

.....

..

27. Here are two regular octagons.

Show that the angle *ABC* is a right angle.



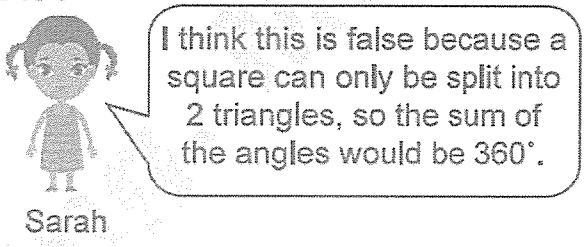
28. What are the exterior angles of

a) a regular hexagon

b) a regular polygon with 10 sides

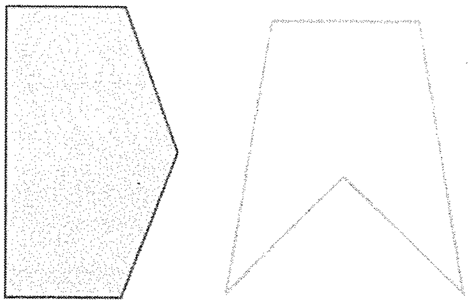
c) a regular heptagon?

29. The sum of the angles in a square is equal to the sum of the angles in 3 triangles, which is 540°.



Is Sarah correct? Explain your answer.

30. The sum of the interior angles of any pentagon will always equal 540˚.



Explain your answer

31. Explain why the sum of the interior angles in a regular hexagon is 720º.