From the Discovery, you should have found that:

> The sum of the exterior angles of any polygon is always 360^o.

This fact is useful for finding the size of an interior angle of a regular polygon.

Example 6 — Self Tutor

A regular polygon has 15 sides. Calculate the size of each interior angle.

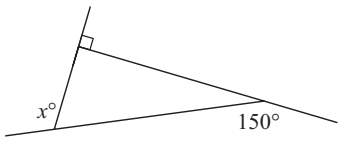
For a 15-sided polygon, each exterior angle is $360^o \div 15 = 24^o$

$\therefore$ each interior angle is $180^o - 24^o = 156^o$

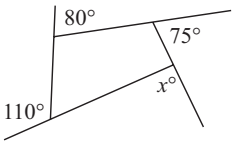
EXERCISE 4E

1 Solve for x:

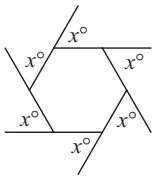
a



b



c



2 Calculate the size of each interior angle of these regular polygons:

a with 5 sides **b** with 8 sides **c** with 10 sides

d with 20 sides **e** with 100 sides **f** with n sides

3 Calculate the number of sides of a regular polygon given that an exterior angle is:

a 45^o **b** 15^o **c** 2^o **d** $\frac{1}{2}^o$

4 Calculate the number of sides of a regular polygon with an interior angle of:

a 120^o **b** 150^o **c** 175^o **d** 179^o

Review set 4A

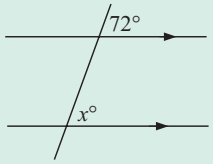
1 Copy and complete: If two parallel lines are cut by a third line then:

a the alternate angles are .....

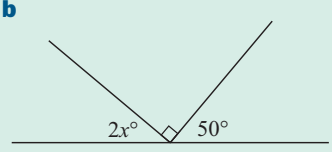
b co-interior angles are .....

2 Find the value of the unknown, giving reasons for your answer:

a



b



c