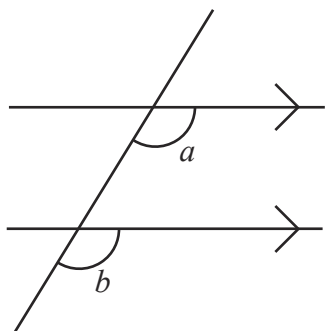# Finding Missing Angles in Parallel Lines
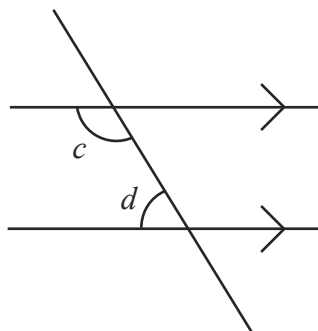
Note: **Diagrams not drawn to scale**.

1. For each diagram, identify whether each pair of angles are corresponding, alternate, supplementary or none of these.
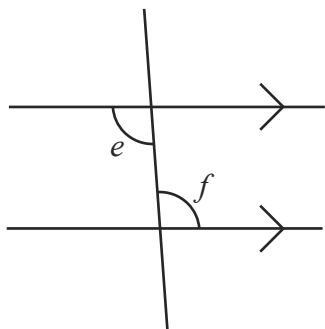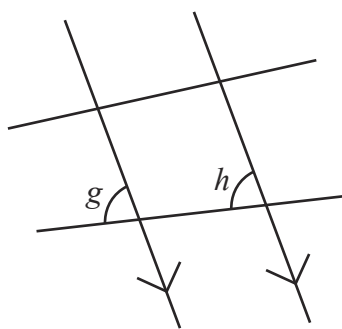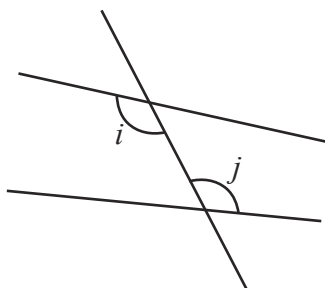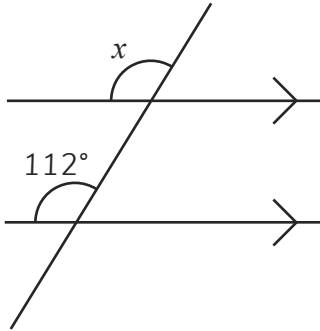
   a.
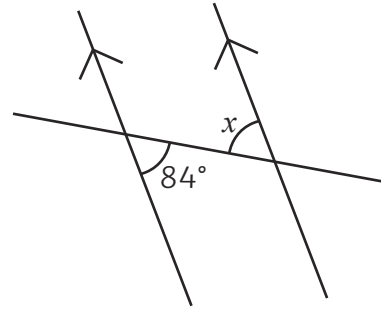

   b.

   c.

   d.

   e.

2. For each diagram, find the missing angles identified by the letters x, y and z. Give full reasons for your answers.
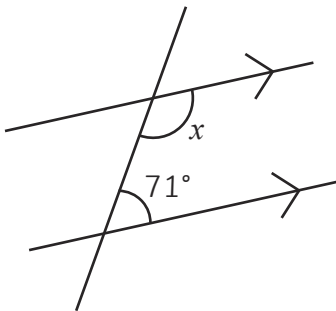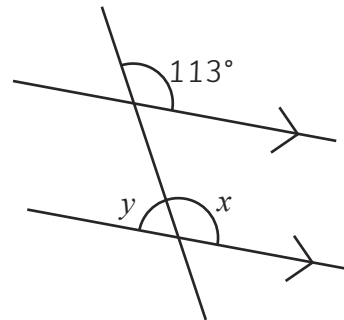
a.

x

112°

b.

x

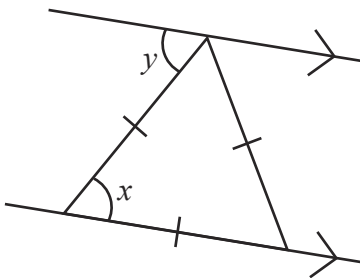84°

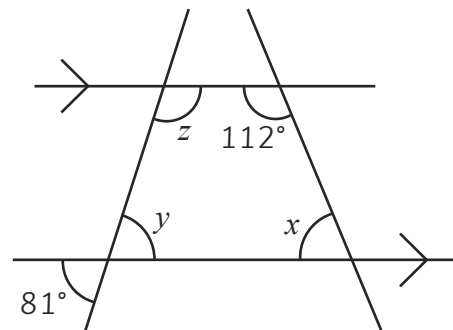c.

x

71°

d.

113°

y   x

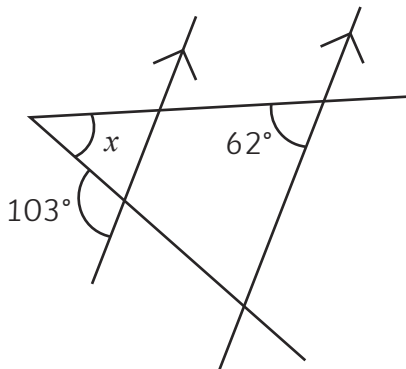e.

y
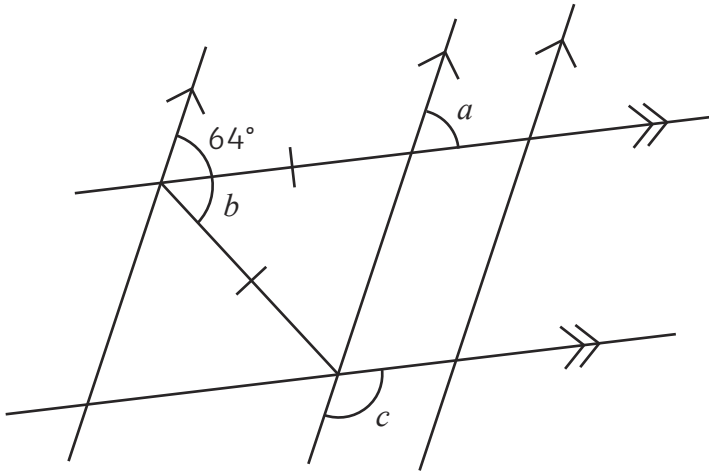
x

f.

z   112°
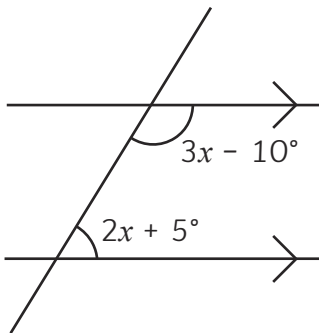
y   x

81°

g.

x   62°

103°

3. Find the missing angles identified by the letters a, b, and c.
   Give a reason for each stage of your working.

4. For these diagrams, form an equation and solve to find the values of x and y.

a.

$3x - 10°$

$2x + 5°$
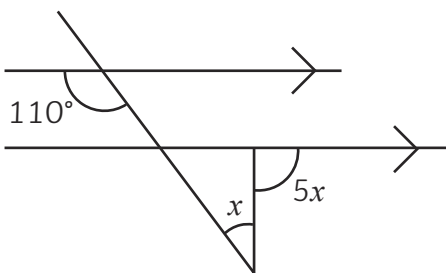
b.

y

$2x + 20°$
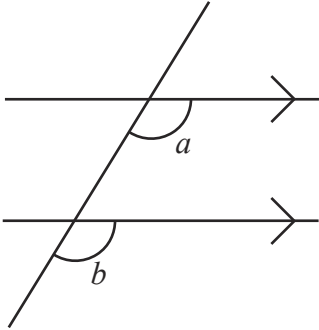
$x + 30°$

c.

$110°$

x

$5x$
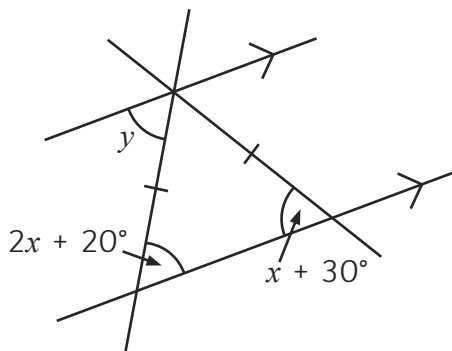
Finding Missing Angles in Parallel Lines **Answers**

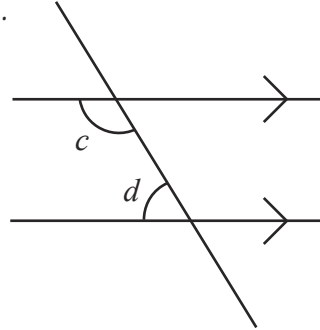Note: **Diagrams not drawn to scale**.

1. For each diagram, identify whether each pair of angles are corresponding, alternate, supplementary or none of these.
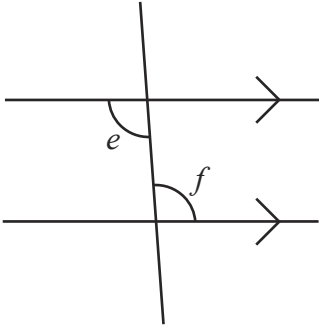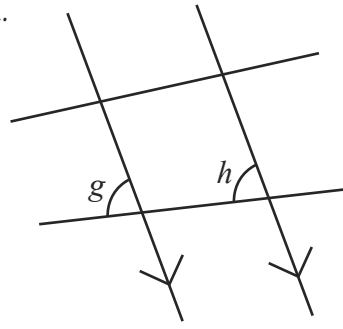
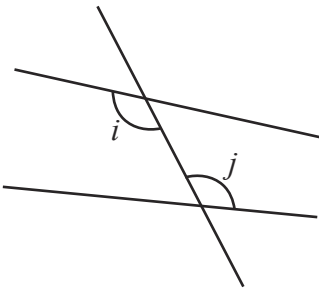a.

Corresponding angles

b.

Supplementary angles

c.
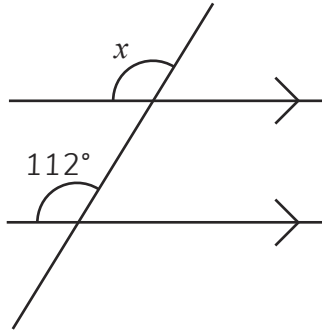
Alternate angles

d.

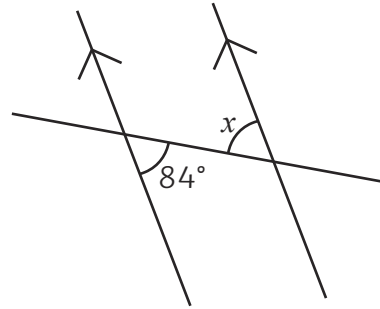**Corresponding angles**

e.

None

2. For each diagram, find the missing angles identified by the letters x, y and z. Give full reasons for your answers.
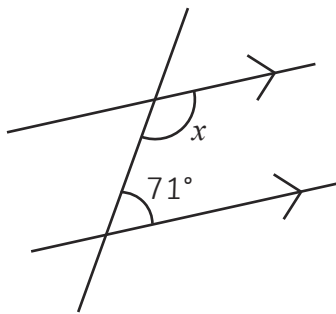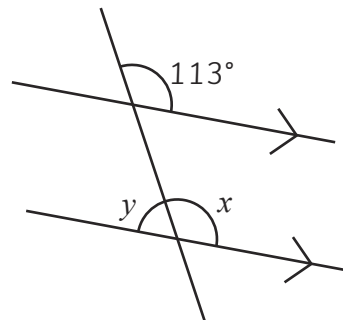
a.

x = 112° **Corresponding angles are equal**
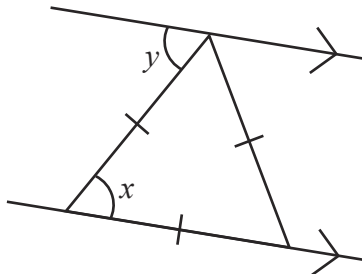
b.

x = 84° **Alternate angles are equal**

c.

x = 109° **Supplementary angles sum to 180˚**

d.
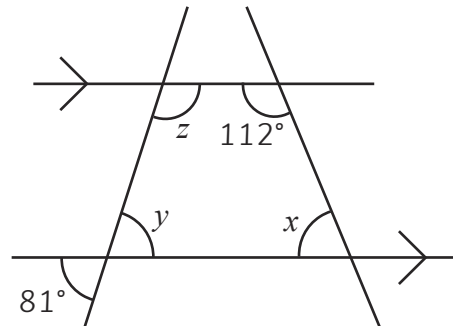

x = 113° **Corresponding angles are equal**
y = 67˚ **Angles on a straight line add to 180˚**

e.
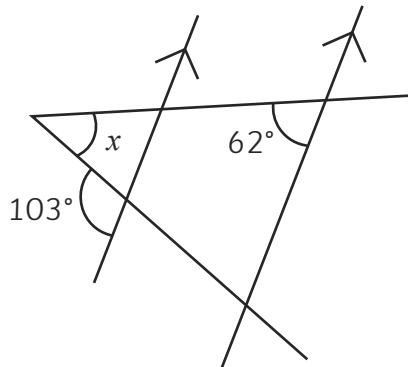

x = 60° **Angles in an equilateral triangle are 60˚**
y = 60° **Alternate angles are equal**

f.

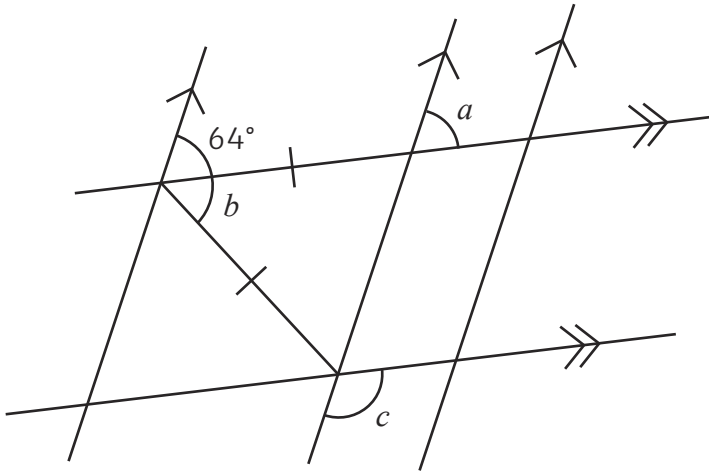x = 68° **Supplementary angles sum to 180°**
y = 81˚ **Vertically opposite angles are equal**
z = 99˚ **Angles in a quadrilateral sum to 360°**

g.

x = 41° **Corresponding angles are equal, angles on a straight line sum to 180˚ and angles in a triangle sum to 180˚**

3. Find the missing angles identified by the letters *a*, *b*, and *c*.
    Give a reason for each stage of your working.

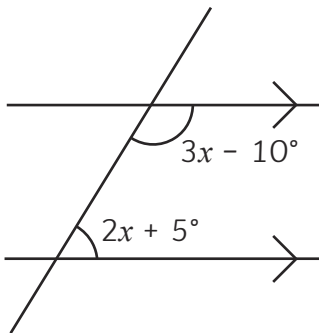**a = 64°**
Corresponding angles are equal

b = 52°
Vertically opposite angles are equal, two angles in an isosceles triangle are equal and angles in a triangle sum to 180˚

c = 116°
Angles on a straight line sum to 180˚ and corresponding angles are equal

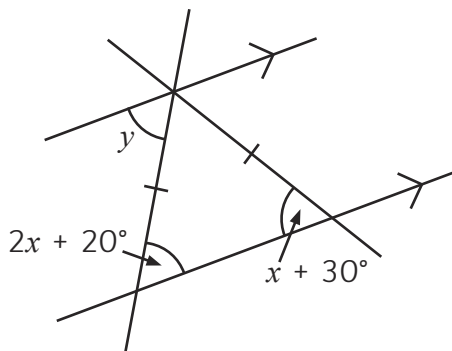4. For these diagrams, form an equation and solve to find the values of *x* and *y*.

a.

$3x − 10 + 2x + 5 = 180$

$x = 37°$
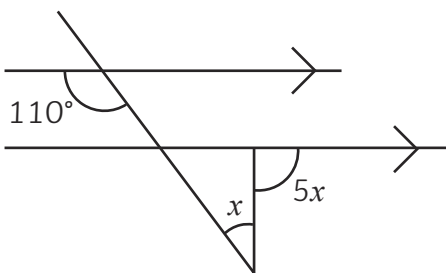
b.

$2x + 20 = x + 30$

$x = 10°$

$y = 40°$

c.

$(180 − 5x) + x + (180 − 110) = 180$

$x = 17.5°$