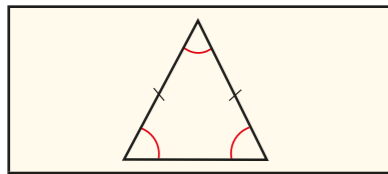# Angles in a triangle – missing angles
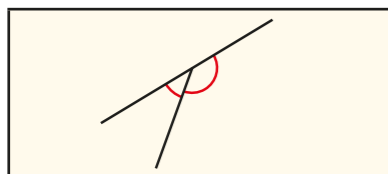
1 Match each diagram to the correct rule.
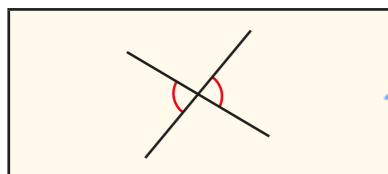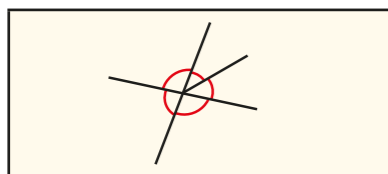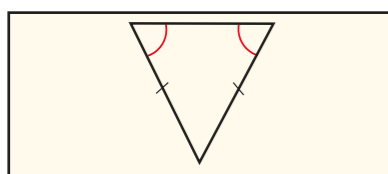
|	
[triangle with equal marks]	**Angles on a straight line sum to 180°**
[crossed lines]	**Angles around a point sum to 360°**
[line with angle]	**Angles in a triangle sum to 180°**
[crossed lines through point]	**In an isosceles triangle, two angles are equal**
[triangle with equal marks]	**Vertically opposite angles are equal**

2 Work out the sizes of the unknown angles.

Give reasons for each stage of your working.

a)

71°

a

63° *b*
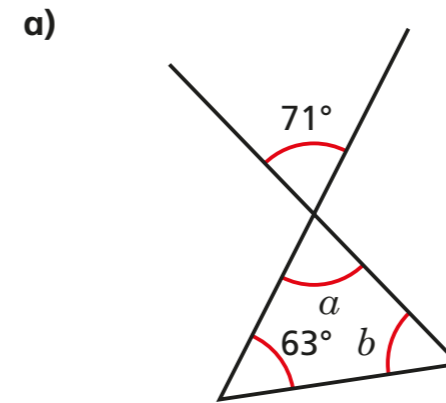
$a = \boxed{71°}$ because <u>vertically</u>

<u>opposite angles are equal</u>

$b = \boxed{46°}$ because <u>angles in</u>

<u>a triangle sum to 180°</u>

b)

137° *d*

f *e*
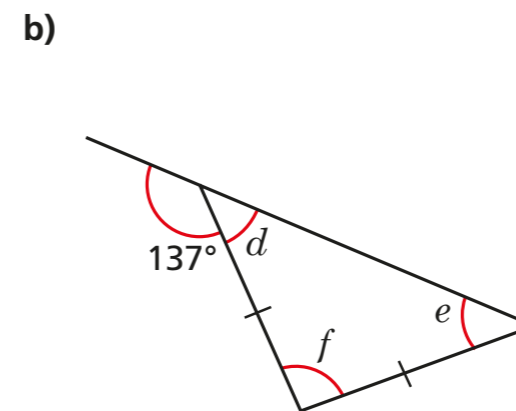
$d = \boxed{43°}$ because <u>angles on</u>

<u>a straight line sum to 180°</u>

$e = \boxed{43°}$ because <u>in an isosceles</u>

<u>triangle two angles are equal.</u>

$f = \boxed{94°}$ because <u>angles in</u>

<u>a triangle sum to 180°</u>

c)

309°

g

h

i
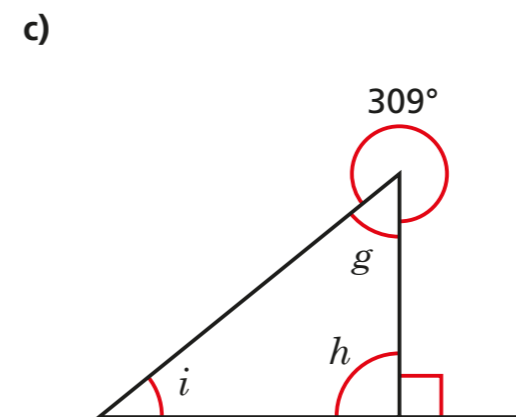
$g = \boxed{51°}$ because <u>angles</u>

<u>around a point sum to 360°</u>

$h = \boxed{90°}$ because <u>angles on</u>

<u>a straight line sum to 180°</u>

$i = \boxed{39°}$ because <u>angles in</u>

<u>a triangle sum to 180°</u>

3 Work out the sizes of the angles marked with letters.
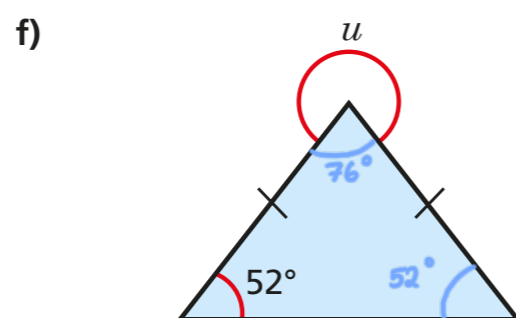
a)

84° 131° 49° p

p = 47°

b)

56° q 34°

q = 124°

c)

r

r = 120°

d)

122° 58° s 41° 41°

s = 40°

e)

71° 52° 57° 128° t

t = 123°

f)

u 76° 52° 52°

u = 284°

g)

72° 72° 49° 57° v 49°

v = 59°

h)

w 25° 25°
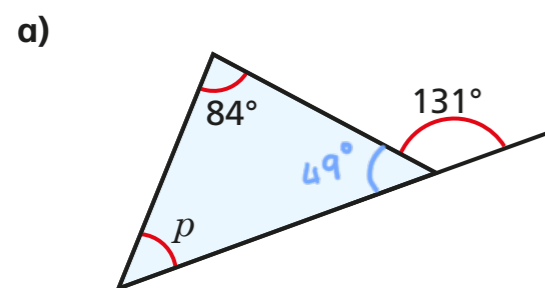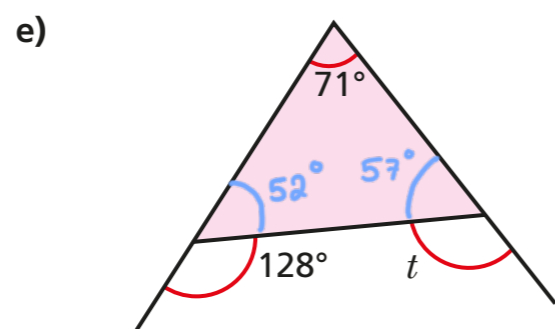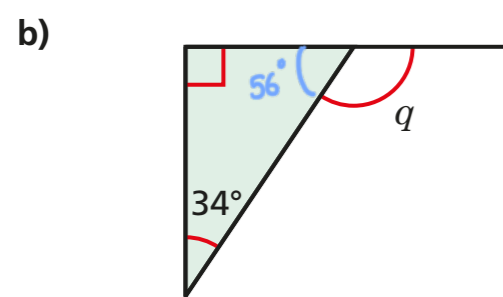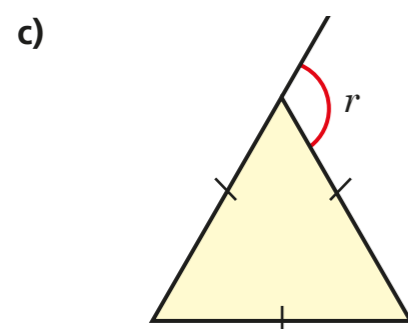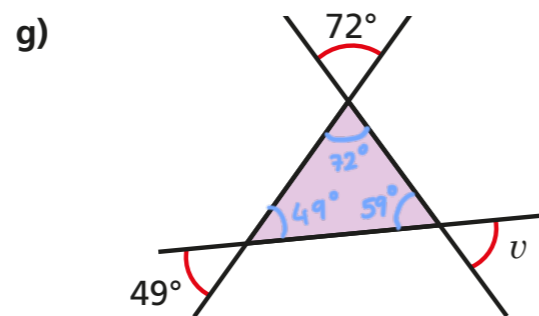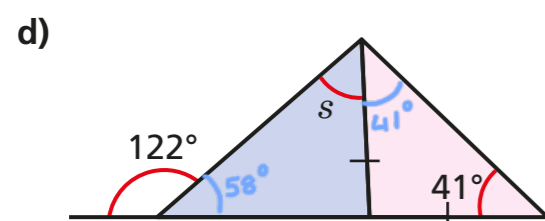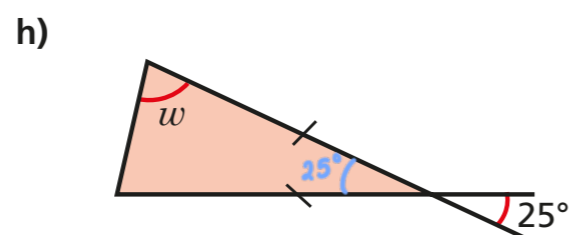
w = 77.5°

Talk about your reasons with a partner.

4 Work out the sizes of the unknown angles.
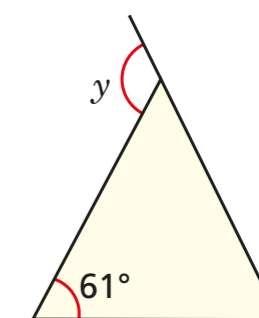
a)

c 87.2° 70.5°

c = 53.8°

b)

115.6° 99.9° d
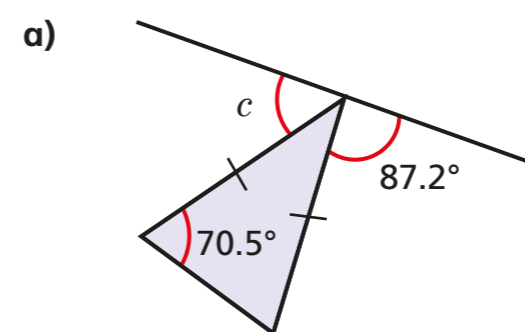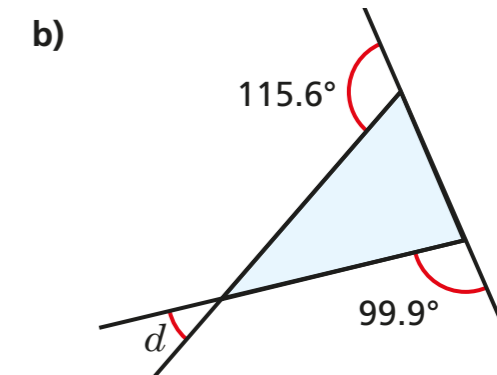
d = 35.5°

5 Work out the size of angle x.

x 48° 37°
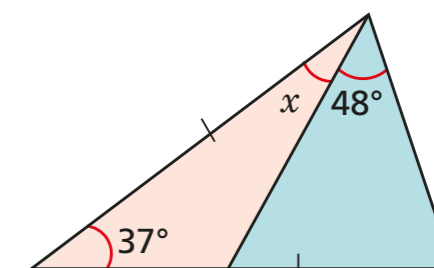
x = 23.5°

6 Here is an isosceles triangle.

Find two possible sizes of angle y.

y 61°

y = 122° or 120.5°

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