

Workout

Question 1:

- (a) $x = 112^\circ$
- (b) $x = 75^\circ$
- (c) $x = 30^\circ$ $y = 150^\circ$
- (d) $x = 99^\circ$ $y = 99^\circ$ $z = 81^\circ$
- (e) $x = 106^\circ$ $y = 106^\circ$
- (f) $x = 123^\circ$ $y = 70^\circ$

Question 2:

- (a) angle g
- (b) angle f
- (c) angle d
- (d) angle c
- (e) angle c
- (f) angle f
- (g) angle f
- (h) angle d
- (i) angle e
- (j) angle e

Question 3:

- (a) $x = 125^\circ$ as $\angle EFC$ and $\angle ACB$ are corresponding so are the same
- (b) $x = 57^\circ$ as $\angle BCF$ and $\angle CFB$ are alternate so are the same
- (c) $x = 70^\circ$ as $\angle EFH$ and $\angle CFG$ are vertically opposite so are the same
- (d) $x = 75^\circ$ as $\angle DCF$ and $\angle CFG$ are co-interior so add to 180°
- (e) $x = 127^\circ$ as $\angle DCF$ and $\angle CFG$ are co-interior so add to 180° , so $\angle CFG = 127^\circ$
 $\angle CFG = \angle EFH$ as they are vertically opposite so are equal.
- (f) $x = 47^\circ$ $\angle EFH$ and $\angle EFC$ are in a straight line, so add to 180° , so $\angle EFC = 47^\circ$
 $\angle EFC = \angle ACB$ as they are vertically opposite so are equal.

Question 4:

- (a) $x = 59^\circ$ $\angle HIE = \angle IEF$ as they are alternate angles so are equal.
- (b) $x = 125^\circ$ $\angle EIH = \angle GHD$ as they are corresponding angles so $\angle GHD = 55^\circ$
 $\angle GHD$ and $\angle GHK$ are in a straight line, so $\angle GHK = 125^\circ$
- (c) $x = 79^\circ$ $\angle ABE = \angle BEF$ as they are alternate angles so $\angle BEF = 41^\circ$
BEF is a triangle so the angles add to 180°
 $\angle BFE = 79^\circ$
- (d) $x = 67^\circ$ $\angle DEB$ and $\angle BEF$ are in a straight line so $\angle BEF = 46^\circ$
Triangle EBF is isosceles so $\angle EFB = 67^\circ$
 $\angle EFB = \angle FBC$ as they are alternate angles

(e) $x = 55^\circ$ $\angle BCG = \angle CGH$ as they are alternate angles, $\angle CGH = 48^\circ$

AGH is a triangle so the angles add up to 180°

$$\angle GAH = 55^\circ$$

(f) $x = 152^\circ$ $\angle ABD = \angle BDE$ as they are alternate angles, $\angle BDE = 76^\circ$

Triangle BDE is isosceles, so $\angle BED = 28^\circ$

$\angle BED$ and $\angle BEF$ are in a straight line, so add to 180°

Apply

Question 1: AB and CD are parallel as $\angle BAC + \angle DCA = 180^\circ$ so they are co-interior angles.

Question 2:

$x = 70^\circ$ $\angle DCE = 70^\circ$ as triangle CDE is isosceles.

$\angle DCE = \angle CEF$ as they are alternate angles

Question 3: $x = 25^\circ$

Question 4: $x = 57^\circ$

Question 5: $x + y + z = 180^\circ$ as they are on a straight line.

Considering alternate angles, the two angles inside the triangle are x and z. So the three angles in the triangle are x, y and z.

Therefore the angles in the triangle add up to 180°