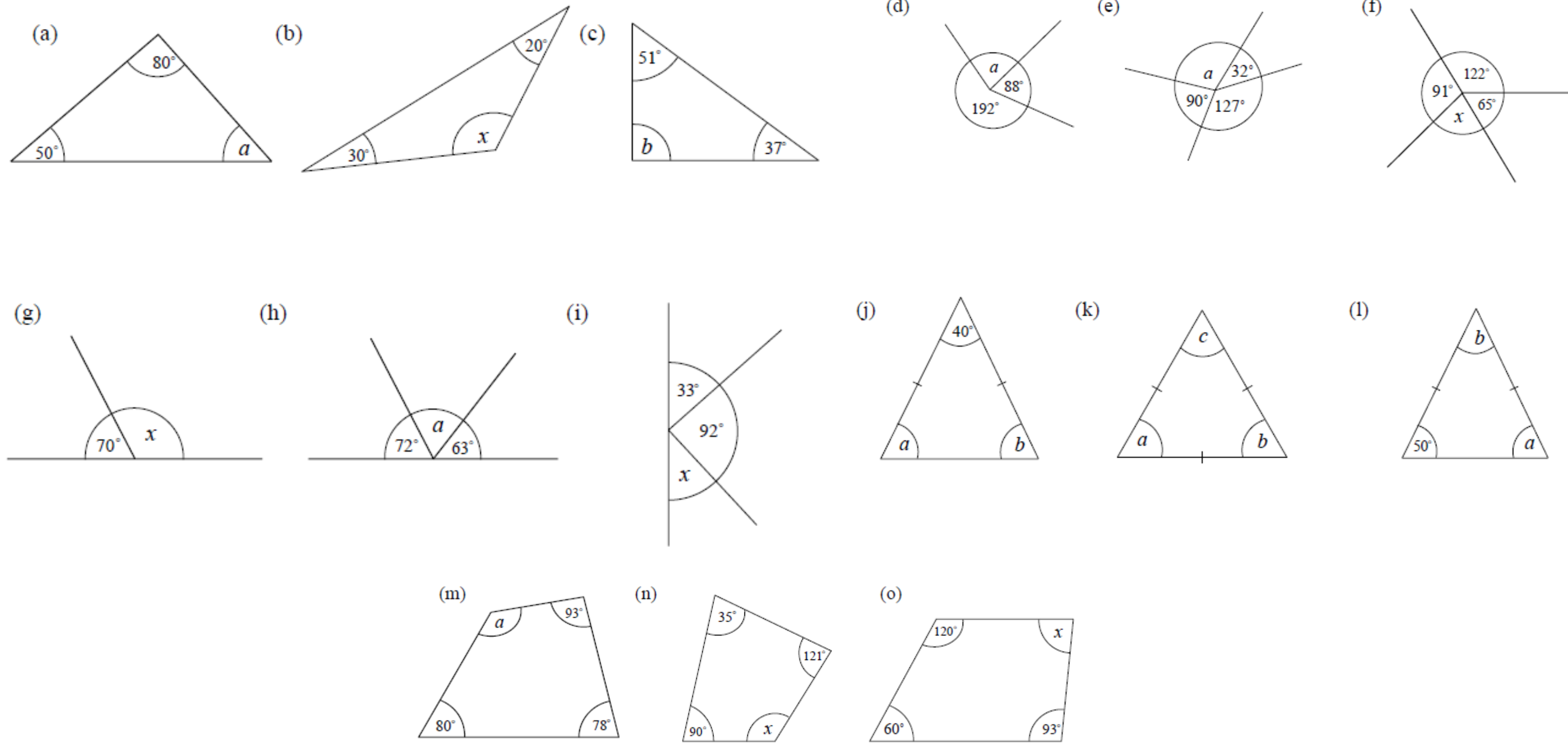
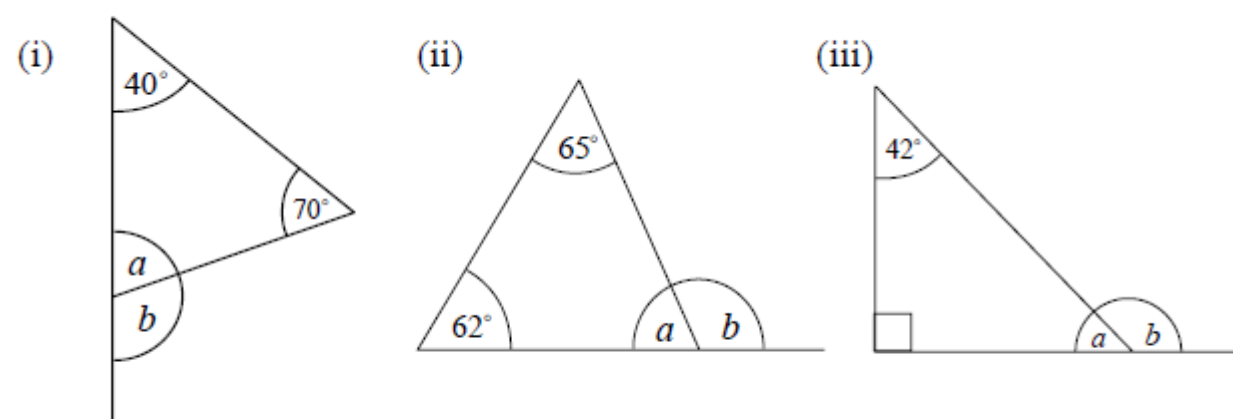


1. Find the size of the angles marked with a letter in each diagram.

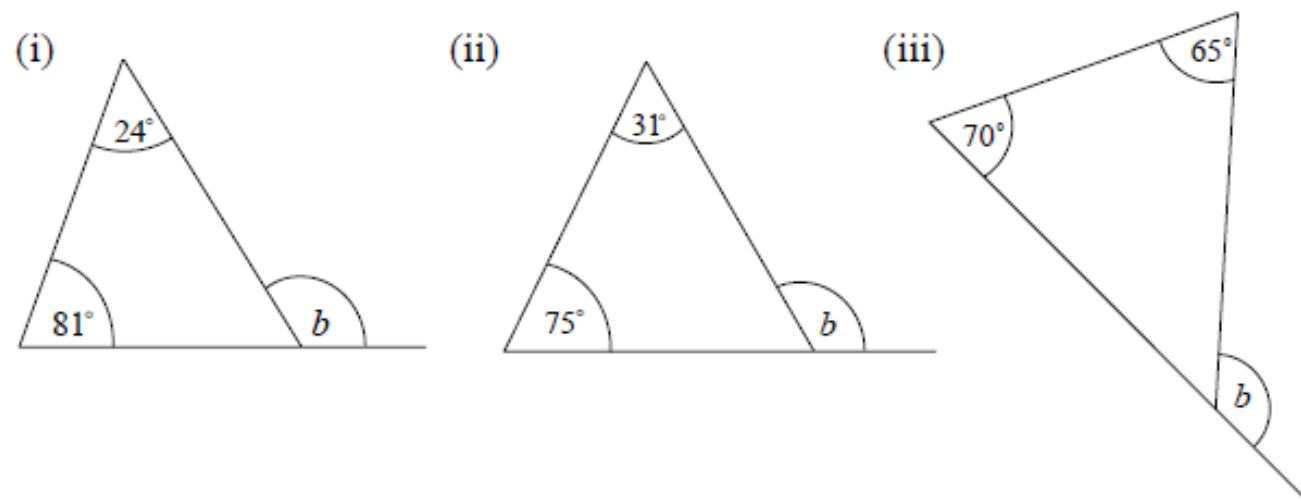


2. (a) For each triangle, find the angles marked a and b .

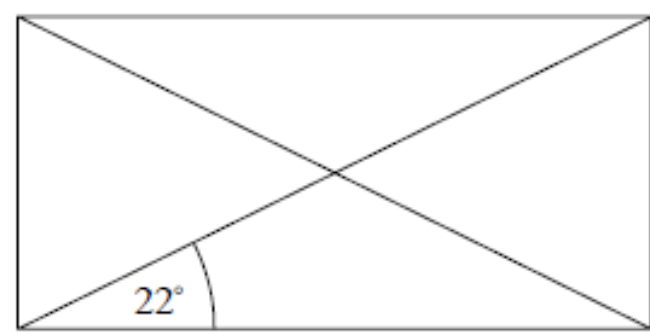


(b) What do you notice about the angle marked b and the other two angles given in each problem?

(c) Find the size of the angle b in each problem below without working out the size of any other angles.

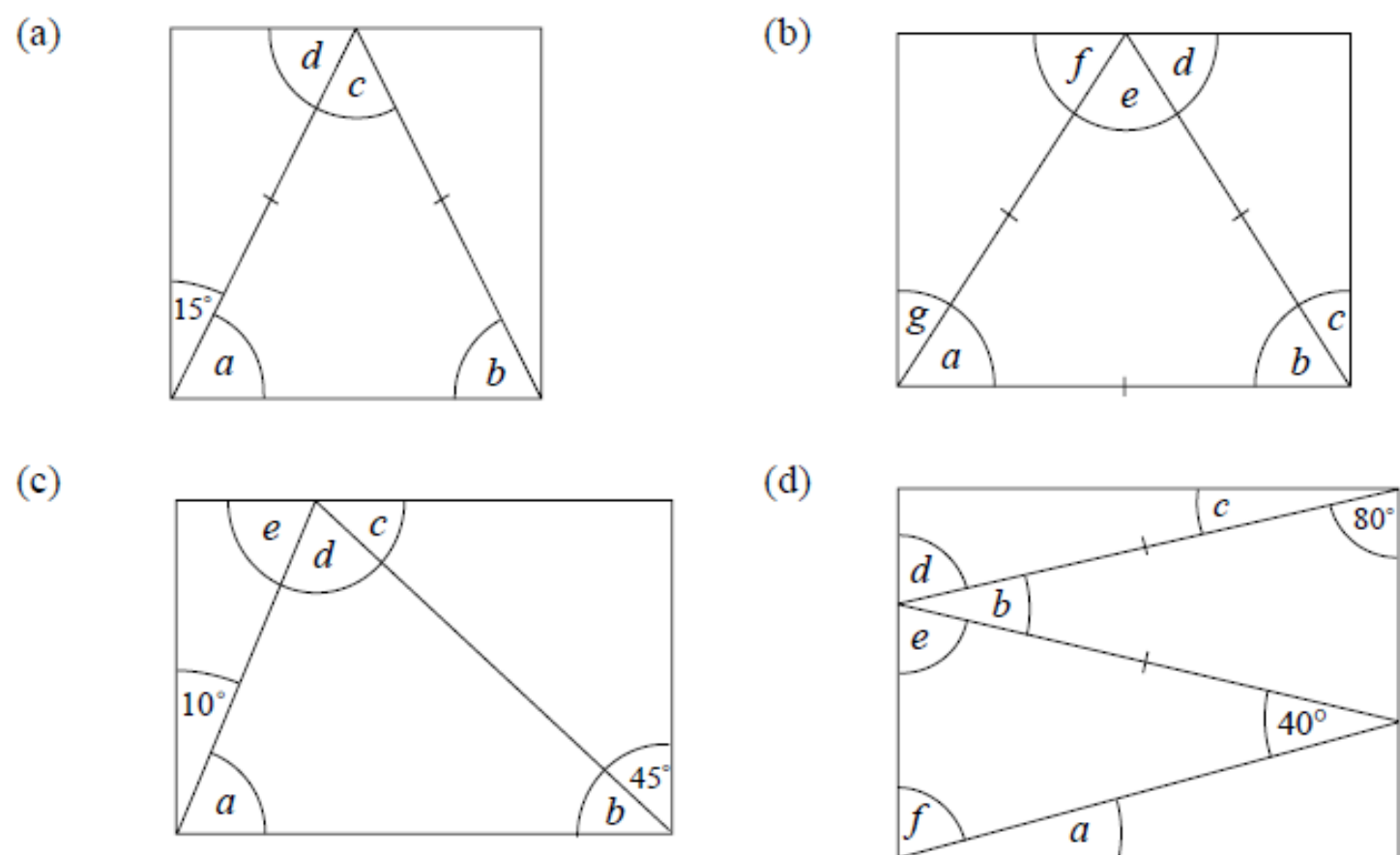


3. The diagram below shows a rectangle with its diagonals drawn in.

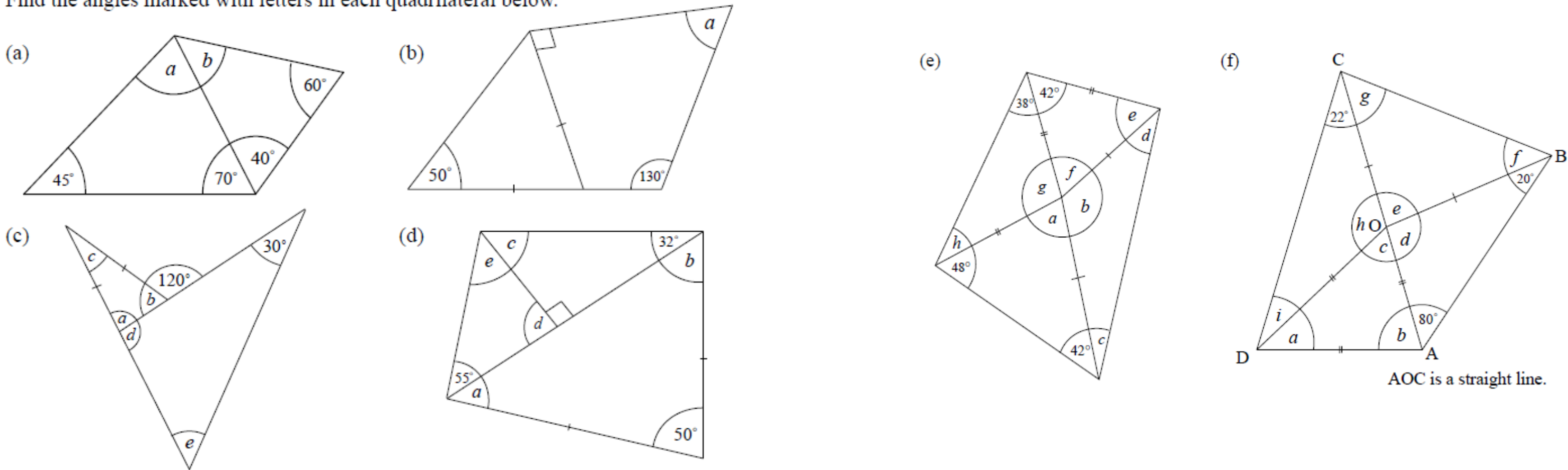


- Copy the diagram and mark in all the other angles that are 22° .
- Find the sizes of all the other angles.

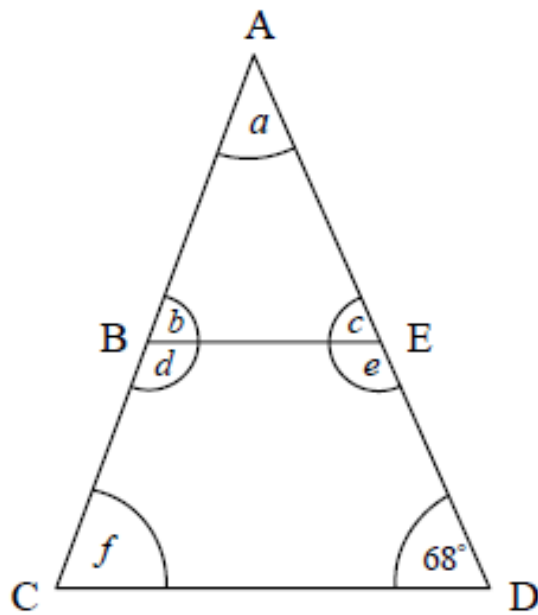
4. Find the angles marked with letters in each of the following diagrams.
In each diagram the lines all lie inside a rectangle.



5. Find the angles marked with letters in each quadrilateral below.

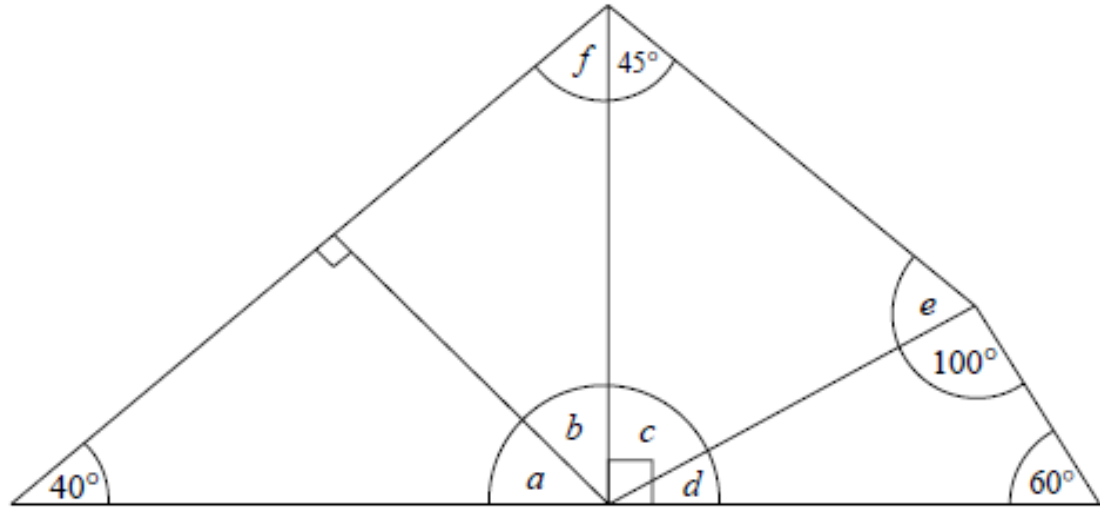


6. A swing is built from two metal frames as shown below.



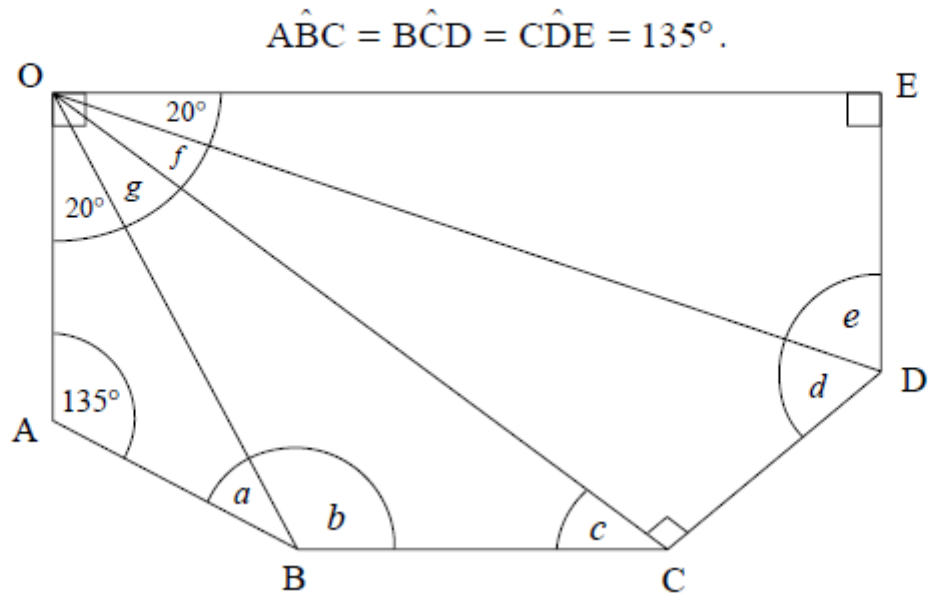
The lengths of AB and AE are the same and the lengths of AC and AD are the same. Find the sizes of the angles a , b , c , d , e and f .

7. The diagram shows a wooden frame that forms part of the roof of a house.

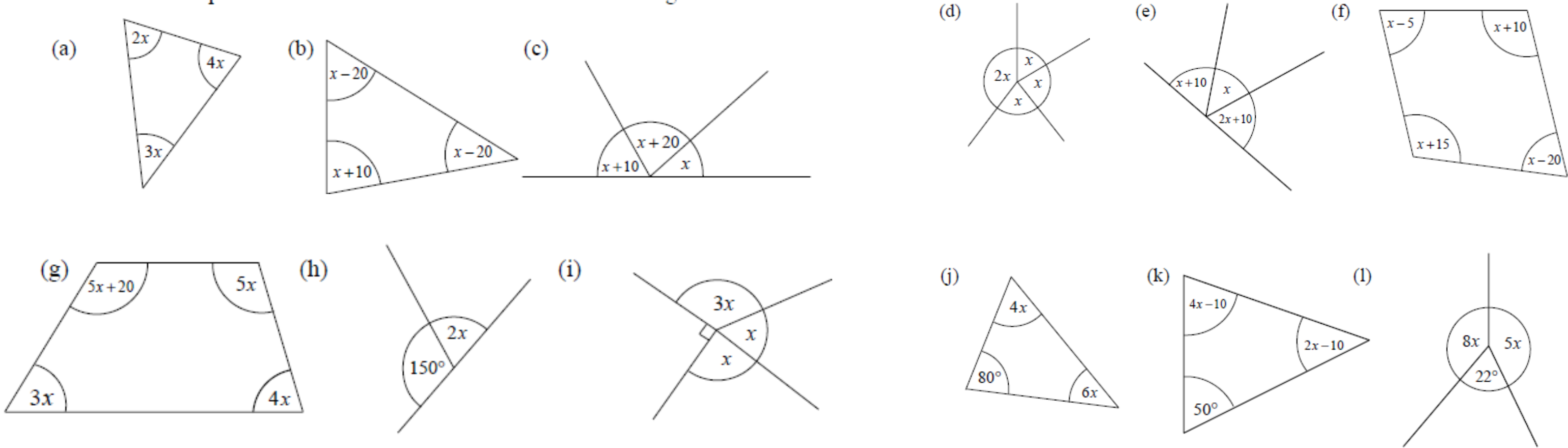


Find the sizes of the angles a , b , c , d , e and f .

8. The diagram shows the plan for a conservatory. Lines are drawn from the point O to each of the other corners. Find all the angles marked with letters, if

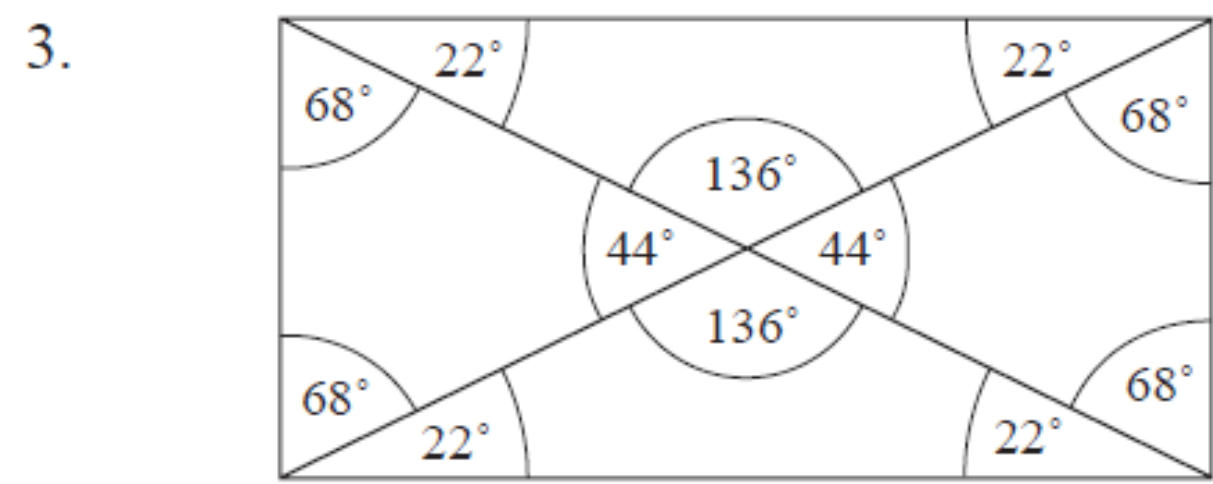


9. Write down an equation and use it to find the value of x in each diagram.



Angle Geometry

1. (a) $a = 50^\circ$ (b) $x = 130^\circ$ (c) $b = 92^\circ$ (d) $a = 80^\circ$
 (e) $a = 111^\circ$ (f) $x = 82^\circ$ (g) $x = 110^\circ$ (h) $a = 45^\circ$
 (i) $x = 55^\circ$ (j) $a = b = 70^\circ$ (k) $a = b = c = 60^\circ$
 (l) $a = 50^\circ, b = 80^\circ$ (m) $a = 109^\circ$ (n) $x = 114^\circ$ (o) $x = 87^\circ$
2. (a) (i) $a = 70^\circ, b = 110^\circ$ (ii) $a = 53^\circ, b = 127^\circ$ (iii) $a = 48^\circ, b = 132^\circ$
 (b) b is equal to the sum of the two opposite angles in the triangle.
 (c) (i) $b = 105^\circ$ (ii) $b = 106^\circ$ (iii) $b = 135^\circ$



4. (a) $a = 75^\circ, b = 75^\circ, c = 30^\circ, d = 75^\circ$
 (b) $a = 60^\circ, b = 60^\circ, c = 30^\circ, d = 60^\circ, e = 60^\circ, f = 60^\circ, g = 30^\circ$
 (c) $a = 80^\circ, b = 45^\circ, c = 45^\circ, d = 55^\circ, e = 80^\circ$
 (d) $a = 30^\circ, b = 20^\circ, c = 10^\circ, d = 80^\circ, e = 80^\circ, f = 60^\circ$
5. (a) $a = 65^\circ, b = 80^\circ$ (b) $a = 40^\circ,$
 (c) $a = 60^\circ, b = 60^\circ, c = 60^\circ, d = 120^\circ, e = 30^\circ$
 (d) $a = 65^\circ, b = 65^\circ, c = 58^\circ, d = 90^\circ, e = 35^\circ$
 (e) $a = 90^\circ, b = 97^\circ, c = 41.5^\circ, d = 41.5^\circ, e = 69^\circ, f = 69^\circ, g = 104^\circ,$
 $h = 38^\circ$
 (f) $a = 60^\circ, b = 60^\circ, c = 60^\circ, d = 80^\circ, e = 100^\circ, f = 40^\circ, g = 40^\circ,$
 $h = 120^\circ, i = 38^\circ$
6. $a = 44^\circ, b = 68^\circ, c = 68^\circ, d = 112^\circ, e = 112^\circ, f = 68^\circ$
7. $a = 50^\circ, b = 40^\circ, c = 70^\circ, d = 20^\circ, e = 65^\circ, f = 50^\circ$
8. $a = 25^\circ, b = 110^\circ, c = 45^\circ, d = 65^\circ, e = 70^\circ, f = 25^\circ, g = 25^\circ$
9. (a) $9x = 180^\circ, x = 20^\circ$ (b) $3x - 30 = 180^\circ, x = 70^\circ$
 (c) $3x + 30 = 180^\circ, x = 50^\circ$ (d) $5x = 360^\circ, x = 72^\circ$
 (e) $4x + 20 = 180^\circ, x = 40^\circ$ (f) $4x = 360^\circ, x = 90^\circ$
 (g) $17x + 20 = 360^\circ, x = 20^\circ$ (h) $2x = 30^\circ, x = 15^\circ$
 (i) $5x + 90 = 360^\circ, x = 54^\circ$ (j) $10x + 80 = 180^\circ, x = 10^\circ$
 (k) $6x = 150^\circ, x = 25^\circ$ (l) $13x + 22 = 360^\circ, x = 26^\circ$