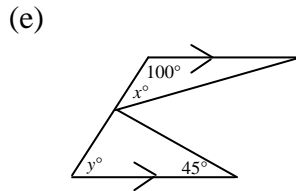
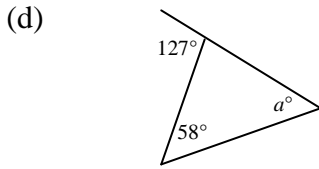
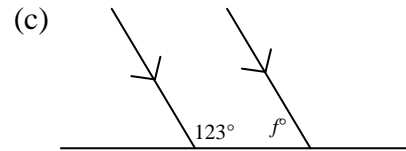
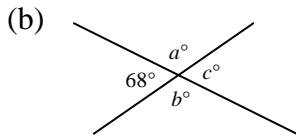
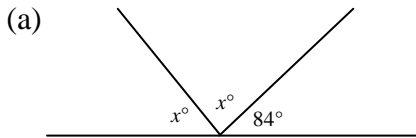


1. Find the value of the unknown in the following diagrams. Give brief reasons for your answers.



2. ABC is a triangle right angled at A and AD is drawn parallel to BC meeting BC in D. Let angle ABC be denote by  $x$ .

(a) Draw a diagram showing this information.

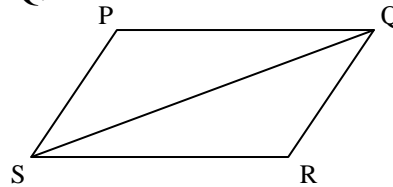
(b) Find the size of all the other angles of the figure in terms of  $x$ .

3. ABC is a right-angled isosceles triangle with the right angle at C. D and E are points on AB such that  $\angle ACD = \angle BCE$ . Prove that  $\triangle CDE$  is isosceles.

4. (a) Calculate the number of degrees in each interior angle of a regular decagon.  
 (b) Calculate the number of degrees in each exterior angle of a regular hexagon.  
 (c) How many sides has a regular polygon, each of whose interior angles is  $168^\circ$ ?

5. PQRS is a quadrilateral in which  $PQ = SR$  and  $SP = RQ$ .

- Prove that: (i)  $\triangle PQS \equiv \triangle RSQ$   
 (ii)  $\angle PQS = \angle QSR$   
 (iii)  $PQ = SR$   
 (iv) PQRS is a parallelogram

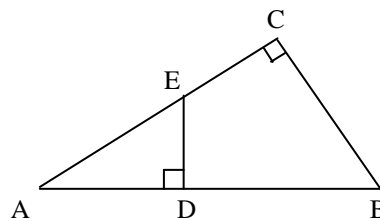


6. D is the mid-point of the side BC of triangle ABC. Perpendicular lines BX, DY and CZ are drawn from B, D and C respectively to any straight line through A. Prove that  $XY = YZ$ .

7. Triangles ABC and ADE are right-angled.

(a) Prove that  $\triangle ABC \sim \triangle AED$

(b) Complete the ratios  $\frac{AB}{?} = \frac{AC}{?} = \frac{BC}{?}$



8. Jan is 1.2 metres tall and casts a shadow 3.6 metres long. Her friend Paul, who is standing next to her, is 1.6 metres tall. What is the length of his shadow?

9. The lengths of the sides of a rhombus and the length of one diagonal are respectively 20cm and 24cm. Calculate the length of the other diagonal.

10. To cover a rectangular benchtop, 400 tiles each 10cm by 5cm are used. If square tiles of length 4cm were to be used instead, how many would be needed?

11. If the length of each sides of a square is increased by 50%, by what percentage is the area increased?

12. In  $\triangle ABC$ , D is a point on BC such that  $BD = CD = AD$ . Prove that  $\angle BAC = 90^\circ$