

PYTHAGORAS' THEOREM

Name: _____

Date: ____/____/2009

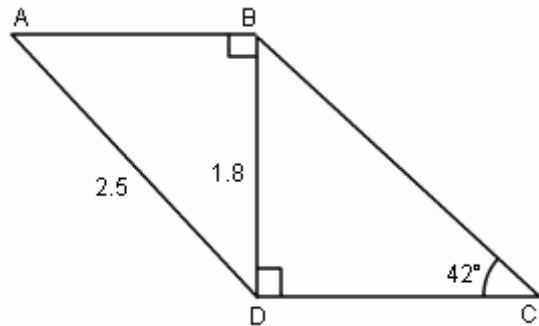
PYTHAGORAS' THEOREM & TRIGONOMETRY

1. The diagram shows a framework ABCD. AD = 2.5 m, BD = 1.8 m and

$$\angle BCD = 42^\circ, \angle ABD = \angle BDC = 90^\circ.$$

Calculate

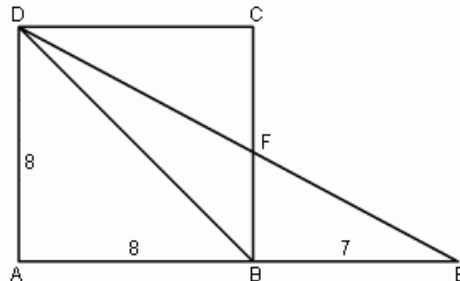
- (a) $\angle ADB$
 (b) BC



2. The diagram shows a square ABCD of side 8 cm. The side AB is produced to E so that BE = 7 cm. DE cuts BC at F.

- (a) Calculate

- (i) the length of DE
 (ii) the area of triangle BED
 (iii) the length of the perpendicular from B to DE.



- (b) Show that $\angle AED = 28.1^\circ$ and find $\angle BDE$

- (c) Name

- (i) two triangles that are congruent and
 (ii) another two triangles that are similar

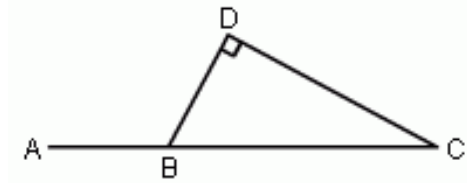
Hence calculate the length of BF

3. In the diagram, ABC is a straight line, $\hat{BDC} = 90^\circ$ and $\sin \hat{ABD} = \frac{15}{17}$

(a) Giving each answer as a fraction, find

(i) $\tan \hat{ABD}$

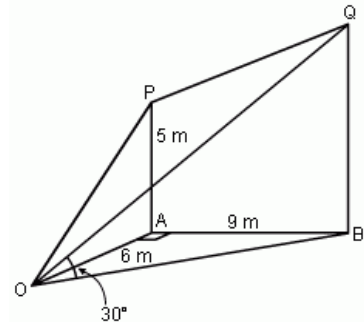
(ii) $\cos \hat{ABD}$



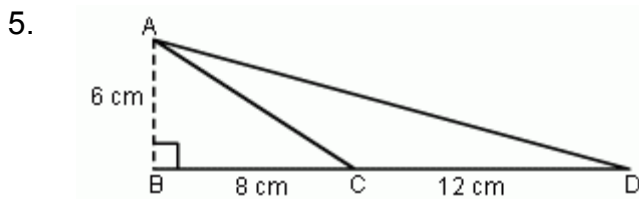
(b) Given that $BC = 51$ cm, calculate the length CD and hence evaluate the length of BD .

4. The diagram above is a sketch of a garden shed. The floor of the shed is a right angled triangle, AOB . P and Q are the top of two vertical poles, AP and BQ . The angle of elevation of Q from O is 30°

Given that $OA = 6$ m, $AP = 5$ m and $AB = 9$ m, calculate



- (a) the angle of elevation of P from O
- (b) the height of BQ , correct your answer to 2 decimal places
- (c) the shortest distance from A to OB , given $\angle AOB = 56.31^\circ$
- (d) the cost of painting the part of the wall $APQB$ at $\$10.50$ per m^2 , to the nearest cent.



(a) Find the length of AC

(b) Write down the value of

(i) $\sin \hat{ACB}$

(ii) $\tan \hat{ACD}$

(c) Calculate the length of AD , giving your answer in radical form, \sqrt{n}