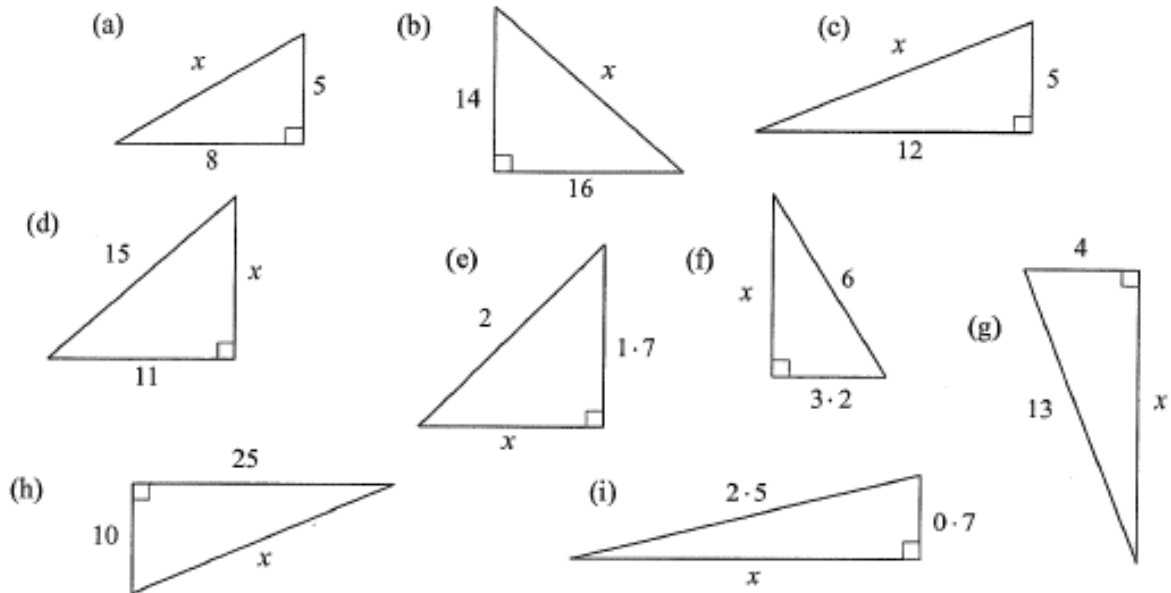# Pythagoras (1)

You need a calculator for this worksheet.
Round your answers to one decimal place where necessary.
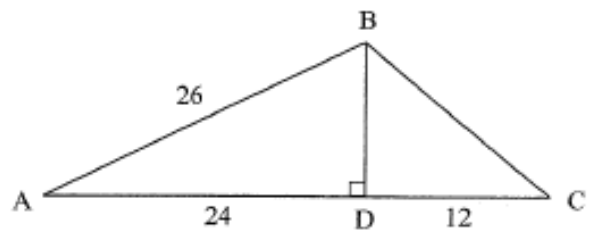
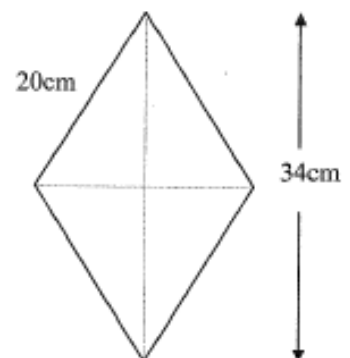1.   Calculate the length of the side marked x in each triangle below

(a)

(b)

(c)

(d)

(e)

(f)

(g)

(h)

(i)

2.   Consider the framework opposite.

    (a)   Calculate the length of BD.

    (b)   Hence calculate the length of BC.

    (c)   Calculate the area of triangle ABC.

3.   A rhombus has sides of 20cm and its longest diagonal measuring 34cm.

    (a)   Calculate the length of the shorter diagonal.

    (b)   Calculate the area of the rhombus

4.   Calculate the distance between each pair of points below.

    (a)   A(2 , 5) , B(7 , 10)   (b)   P(1 ,8) , Q(12 ,2)

    (c)   E(−2 ,3) , F(2 ,−4)   (d)   R(−7 ,−3) , F(3 ,−1)
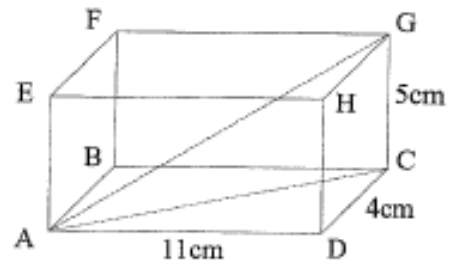
Pythagoras (2)

You need a calculator for this worksheet.
Round your answers to one decimal place where necessary.
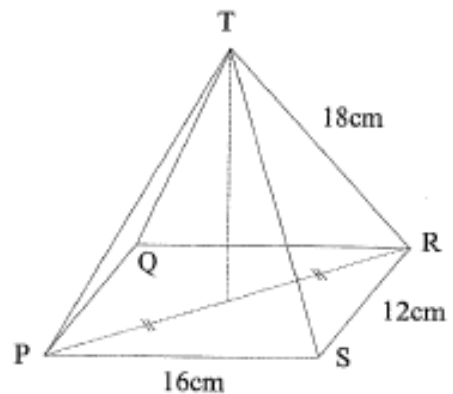
1.   Consider the cuboid opposite.

    (a)   Calculate the length of the face
            diagonal AC.

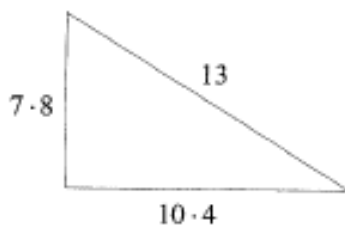   (b)   Hence calculate the length of the
            space diagonal AG.
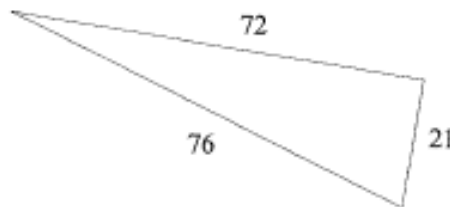
2.   The pyramid opposite has a rectangular base.

    (a)   Calculate the length of the base
            diagonal PR.

    (b)   Given that edge TR = 18cm, calculate the
            vertical height of the pyramid.

3.   Which of the following triangles are right-angled?
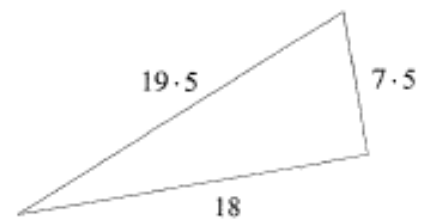
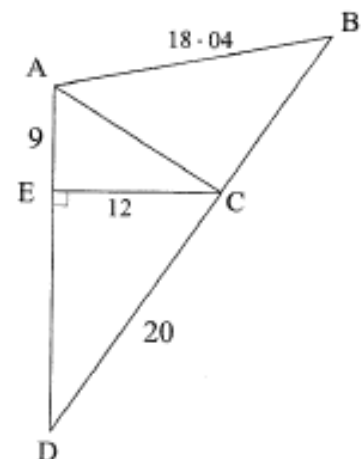   (i)   (ii)   (iii)

4.   Consider the diagram opposite. All lengths are centimetres.

    (a)   Calculate the length of AC.

    (b)   Calculate the length of ED.

    (c)   Prove that triangle ACD is right-angled at C.

    (d)   Hence calculate the length of BC and the area
            of triangle ABC correct to the nearest whole number.

Pythagoras (3) - Problems

You need a calculator for this worksheet.
Round your answers to one decimal place where necessary.

Begin questions 1 to 8 by drawing a clear and well labelled diagram. Let x be the length to be found.
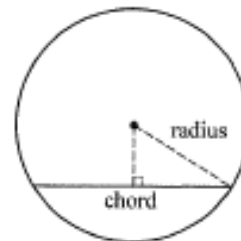
1. A ship sails 9km due North and then a further 17km due East.
    How far is the ship from its starting point?

2. An aircraft flies 400km due West and then a further 150km due South.
    How far is the aircraft from its starting point?

3. A ship sailed $8 \cdot 42$ km due East followed by $4 \cdot 7$ km due South.
    How far would it have sailed if it had followed a direct course?

4. A ship sails 9km due North and then a further distance x km due West.
    The ship is now 12km from its starting point. Calculate x.

5. How long is the diagonal of a square of side 11mm?

6. A rectangle measures 14cm by 9cm. Calculate the length of its diagonals.

7. A ladder of length 5 metres leans against a vertical wall with the foot of the ladder 2 metres
    from the base of the wall. How high up the wall does the ladder reach?

8. A ladder is placed against a vertical wall. If the distance between the foot of the ladder and the
    wall is $1 \cdot 8$ metres, and the ladder reaches 4 metres up the wall, calculate the length of the ladder.

9. A circle has a diameter of 20cm.
    A chord is drawn which is 6cm from the centre of the circle.
    Calculate the length of the chord.

    This diagram may
    help you with
    questions 9 and 10

10. A circle has a diameter of 12cm.
    A chord is drawn which is 5cm from the centre of the circle.
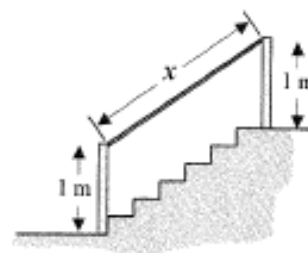   Calculate the length of the chord.

11. The room shown opposite has two parallel sides.

    Using the given dimensions calculate the
    perimeter of the room.
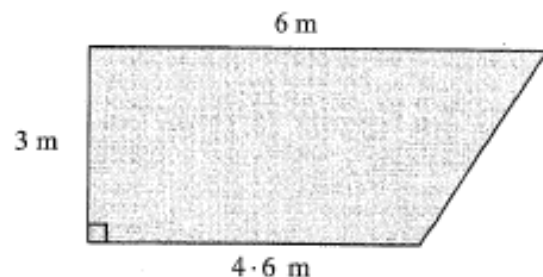
12. Calculate the length of the banister rail shown in
    the diagram if there are 6 stairs, and if each tread
    measures 25cm and each riser 20cm.

    Give your answer in metres.

Pythagoras (1)

1.   (a) $x = 9 \cdot 4$ (b) $x = 21 \cdot 3$ (c) $x = 13$

       (d) $x = 10 \cdot 2$ (e) $x = 1 \cdot 1$ (f) $x = 5 \cdot 1$

       (g) $x = 12 \cdot 4$ (h) $x = 26 \cdot 9$ (i) $x = 2 \cdot 4$

2.   (a)   BD = 10

       (b)   BC = 15·6

       (c)   Area = 180 cm^2

3.   (a)   21   or   21·1 cm

       (b)   Area $\approx$ 357 cm^2

4.   (a)   7·1   (b)   12·5

       (c)   8·1   (d)   10·2

Pythagoras (2)

1.   (a)   11·7 cm   (b)   12·7

2.   (a)   20 cm   (b)   15 cm

3.   (i)   Yes   (ii)   No   (iii)   Yes

4.   (a)   15 cm   (b)   16 cm   (c)   Proof   (d)   BC = 10 cm ,   Area = 225 cm^2

Pythagoras (3) - Problems

1.   19·2 km   2.   427·2 km

3.   9·6 km   4.   7·9 km

5.   15·6 mm   6.   16·6 cm

7.   4·6 m   8.   4·4 m

9.   16 cm   10.   6·6 cm

11.   P = 16·9 m   12.   1·9 (2) m