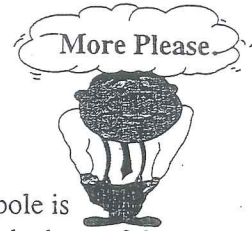


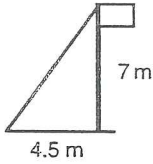
Name _____
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 Date _____

Assignment : # _____



Pythagoras' Theorem. Worded Questions.

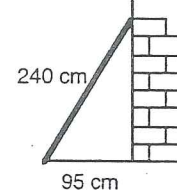
1).



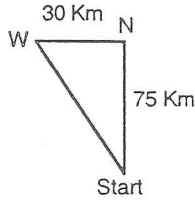
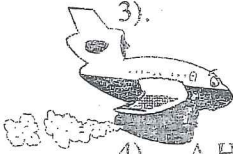
A girl guide ties a wire to a flag pole to secure it. The flag pole is 7 metres long and she is to anchor it 4.5 metres away from the base of the flag pole. How long must her wire be to do this ?

2).

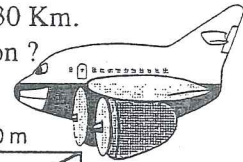
A man has a ladder 240 cm long. He places it against a wall. For safety the bottom of the ladder must be 95 cm from the base of the wall. How high up the wall will the ladder reach ?



3).

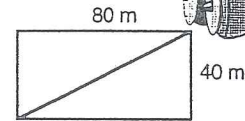


A plane flies due north for 75 Km then due west for 30 Km. How far is the plane from the original starting position ?



4).

A Hockey pitch is 80 metres by 40 metres. Mandy knocks the ball from one corner flag to the corner flag diagonally opposite. How far has the ball travelled ?



5).

A square has sides of length 32 cm. Find the length of one of its diagonals.

6).

A sports fan finds out the dimensions of various sports pitches. Find the **diagonal** distance of each of the following:

- a basketball court is 50 feet wide by 94 feet long,
- an American football pitch is 160 feet wide by 300 feet long,
- a snooker table is 4.5 feet wide by 9 feet long,
- a squash court is 18.5 feet wide by 32 feet long,
- a volleyball court is 29.5 feet wide by 59 feet long,
- a tennis court is 36 feet wide by 78 feet long,
- a lacrosse pitch is 60 yards wide by 110 yards long,
- a table tennis table is 5 feet wide by 9 feet long,
- an ice hockey pitch is 85 feet wide by 200 feet long.



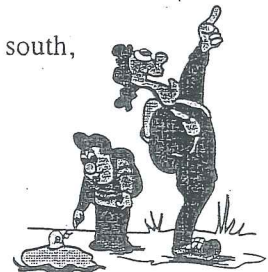
7).

A ladder reaches 6.8 metres up a vertical wall. The base of the ladder is on horizontal ground, 1.8 metres away from the bottom of the wall. How long is the ladder ?

8).

An orienteering course is set out as follows. From the start travel 6 Km due south, then 4 Km due east and then return to the start. Find

- the distance of the return (last) leg,
- the total distance you would run if you completed the whole course from start to finish.



9).

Calculate the distance between the coordinates :

- (3,5) and (8,17),
- (0,0) and (3,4),
- (3,5) and (4,9).

10).

The size of Premiership football pitches are determined by this F.A. rule:

"the width of the pitch must lie between 50 yards and 100 yards, the length of the pitch must lie between 100 yards and 130 yards".

Find the **biggest** and **smallest** diagonal you could make on a Premiership football pitch.



- 11). A ladder is 4.5 metres long. Its foot is standing on a horizontal path. Its top is resting against a vertical wall. The foot of the ladder is 2.4 metres from the base of the wall. How far up the wall is the top of the ladder ?
- 12). Lee stands on the end of a pier. The pier is 3.5 metres above the water. He sees a dog swimming in the water 8 metres away from the base of the pier. Lee throws the dog a swimming aid attached to some rope to help it return to the pier. How long must the rope be to reach the dog ?



- 13). A plank of wood leans against a wall with its upper end 5.1 metres off the ground. Its lower end is 3.2 metres from the foot of the wall. How long is the plank of wood ?
- 14). A skier travels down a steep hill losing a vertical height of 840 metres as he covers 1950 metres horizontally. Calculate the actual distance he skis down the hillside.

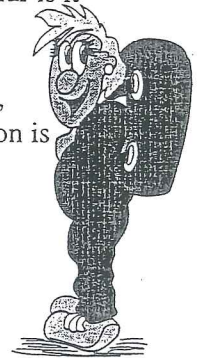


- 15). A telegraph pole 7.5 metres high is held firm by a wire attached to its top and fixed to the ground 6.4 metres away from the foot of the pole. How long is the wire ?
- 16). Calculate the height of an equilateral triangle with sides 10 cm.
- 17). A ship leaves port and sails 12.9 Km due east and then 4.6 Km due South. It gets into difficulty. What is the shortest distance back to the port ?

- 18). The diagonal of a rectangle is 18 cm long and one of its sides is 6 cm long. Find the length of the other side of the rectangle.
- 19). A rectangular playground is 9.8 metres long by 6.8 metres wide. What is the furthest distance a child can run in a straight line in the playground ?

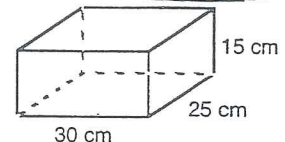
- 20). A chimney 14.5 metres high casts a shadow 9.4 metres long on level ground. How far is it from the top of the chimney to the end of its shadow ?

- 21). Four towns Able, Binton, Cable and Dinton are on the same flat coastal plain. Able, Binton and Dinton are due north, due west and due east of Cable respectively. Binton is 17 Km from Able and 20 Km from Dinton. Dinton is 5 Km from Cable.
- Calculate the distance from Cable to Binton.
 - Calculate the distance from Cable to Able.



- 22). The diagonal of a square is 50 cm long. How long are the sides of the square ?

- 23). A box has a rectangular base of 30 cm by 25 cm. Iron rods are to be placed in the box.
- Calculate the biggest sized rod that could be laid down in the box.
 - Only one rod is to be placed in the box. Calculate the longest rod possible that can be placed in the box. (It is not the same answer as a)).



- 24). The distance diagonally across a square sandpit is 1.28 metres long. Find the length of the sides of the sandpit.
- 25). A cuboid box has dimensions 40 cm by 30 cm by 20 cm. The box is to hold knitting needles. What is the size of the biggest knitting needle the box can hold ?

Answers. Levels 7/8. Pack 2.

$$5^2 + 12^2 = c^2$$

Page 3. Pythagoras' Theorem 1.

A. Positive solutions only.

- 1). 7 2). 10 3). 5 4). 11 5). 13 6). 3 7). 15 8). 1
 9). 12 10). 9 11). 3.9 12). 8.7 13). 6.8 14). 9.8 15). 11.5 16). 15.7
 17). 5.8 18). 18.8 19). 28.0 20). 23.7

- #### B.
- 1). $r = w - t$ 2). $s = e - d$ 3). $m = f - q$ 4). $c = s - b$ 5). $u = m - p$
 6). $f = n - j$ 7). $v = a - c$ 8). $y = u - x$ 9). $t = e - d$ 10). $w = g - p$
 11). $z = y - x$ 12). $h = a - m$ 13). $d = y - p$ 14). $k = y - x$ 15). $d = g - f$

Page 4.

- 1). 12 2). 17 3). $4 \frac{11}{20}$ feet

Page 5. Pythagoras' Theorem 2.

- #### A.
- 1). $a^2 = b^2 + c^2$ 2). $n^2 = m^2 + o^2$ 3). $x^2 = w^2 + v^2$ 4). $q^2 = p^2 + r^2$
 5). $f^2 = g^2 + e^2$ 6). $i^2 = g^2 + h^2$ 7). $e^2 = f^2 + g^2$ 8). $s^2 = t^2 + u^2$
 9). $e^2 = d^2 + f^2$ 10). $k^2 = l^2 + j^2$ 11). $SU^2 = UT^2 + ST^2$ 12). $KJ^2 = JL^2 + LK^2$
 13). $GI^2 = GH^2 + HI^2$ 14). $PR^2 = PQ^2 + QR^2$ 15). $UT^2 = TS^2 + SU^2$ 16). $DF^2 = DE^2 + EF^2$
 17). $ZW^2 = VW^2 + VZ^2$ 18). $VW^2 = WZ^2 + VZ^2$ 19). $BC^2 = AB^2 + AC^2$ 20). $NO^2 = MO^2 + MN^2$
 21). $p^2 = q^2 + r^2$ 22). $AC^2 = BC^2 + AB^2$ 23). $MO^2 = MN^2 + NO^2$ 24). $t^2 = u^2 + v^2$
 25). $DF^2 = ED^2 + EF^2$ 26). $t^2 = s^2 + r^2$ 27). $KL^2 = JL^2 + KJ^2$ 28). $f^2 = g^2 + h^2$
 29). $GI^2 = GH^2 + HI^2$ 30). $t^2 = u^2 + v^2$

Page 6.

- #### B.
- 1). 10 2). 13 3). 17 4). 29 5). 5 6). 37 7). 26 8). 20
 9). 25 10). 65 11). 6.5 12). 5.3 13). 8.2 14). 8.5 15). 8.5 16). 7.4
 17). 12.2 18). 5 19). 22.28 20). 18.72 21). 16.64 22). 8.49 23). 22.47 24). 22.36
 25). 34.99 26). 72.25 27). 48.47 28). 129.80 29). 90.71 30). 14.47 31). 15.74 32). 12.21
 33). 3.89 34). 18.87 35). 105.11

Page 7. Pythagoras' Theorem 3.

- #### C.
- 1). 4 2). 24 3). 12 4). 15 5). 35 6). 48 7). 16 8). 60
 9). 13 10). 18 11). 9.9 12). 14.3 13). 16.8 14). 39.9 15). 3.6 16). 1.8
 17). 43.50 18). 16.52 19). 9.39 20). 30.71 21). 76.66 22). 34.89 23). 45.25 24). 23.43
 25). 53.67 26). 19.36 27). 18.10 28). 51.85 29). 44.69 30). 29.27 31). 47.49 32). 20.62
 33). 35.17 34). 17.20 35). 2.83

Page 8.

- #### D.
- 1). 13 2). 15 3). 61 4). 17 5). 16 6). 39 7). 39 8). 25
 9). 30 10). 12 11). 12.6 12). 52 13). 51 14). 36 15). 82 16). 16
 17). 108 18). 4.1 19). 58 20). 15

Page 9. Pythagoras' Theorem. Worded Questions.

- 1). 8.32 2). 220.40 3). 80.78 4). 89.44 5). 45.25
 6). a). 106.47 b). 340 c). 10.06 d). 36.96 e). 65.96
 f). 85.91 g). 125.30 h). 10.30 i). 217.31
 7). 7.03 8). a). 7.21 b). 17.21 9). a). 13 b). 5 c). 4.12
 10). 111.8 - 164.0

Page 10.

- 11). 3.81 12). 8.73 13). 6.02 14). 2123.23
 15). 9.86 16). 8.66 17). 13.70 18). 16.97 19). 11.93
 20). 17.28 21). a). 15 b). 8 22). 35.36 23). a). 39.05 b). 41.83
 24). 0.91 25). 53.85