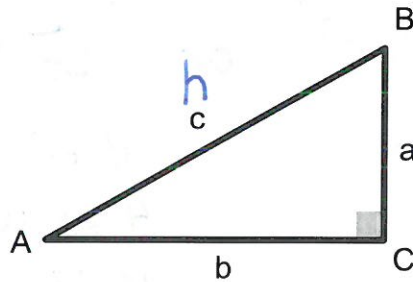


Lesson – Pythagorean Theorem

DATE

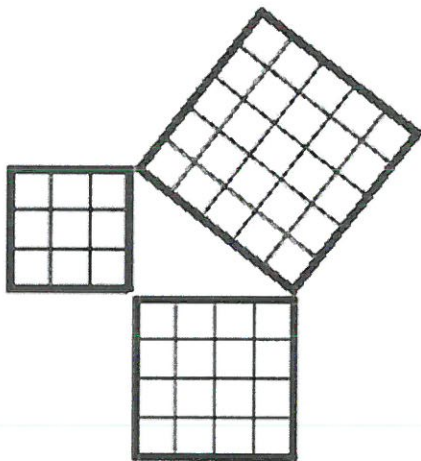
1. A right triangle:



- a) hypotenuse:

- Longest side of right $\triangle$
- Opposite of right angle (90°)
- Can be calculated if know other two sides.

2. What Pythagoras discovered – if you make a square out of each side of a right triangle...:



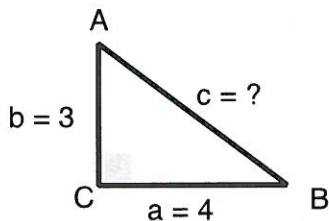
Constant connection between
the 3 sides sizes.

3. Pythagorean Theorem:

a) Square of hypotenous equals to the sum squares of other sides.

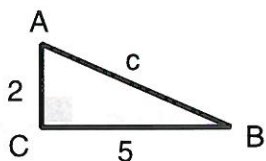
b) $a^2 + b^2 = c^2$ or $c = \sqrt{a^2 + b^2}$

4. Find the missing side:



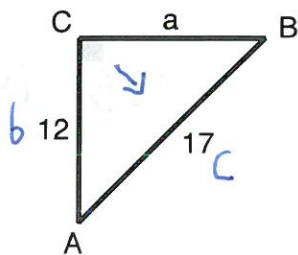
$$\begin{aligned} a^2 + b^2 &= c^2 \\ 4^2 + 3^2 &= c^2 \\ 16 + 9 &= c^2 \\ \sqrt{25} &= \sqrt{c^2} \\ c &= 5 \end{aligned}$$

5. Find the missing side: *One decimal.*



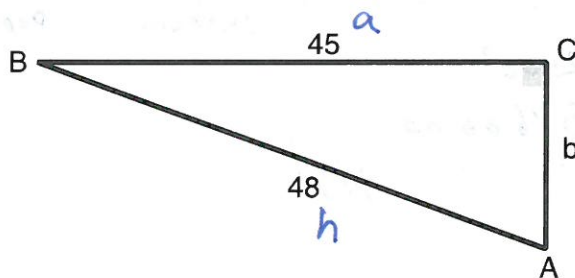
$$\begin{aligned} c &= \sqrt{a^2 + b^2} \\ c &= \sqrt{2^2 + 5^2} \\ c &= \sqrt{4 + 25} \\ c &= \sqrt{29} \\ c &= 5.4 \end{aligned}$$

6. Find the missing side:



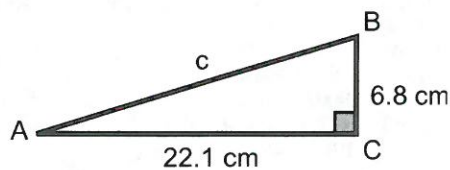
$$\begin{aligned} a^2 + b^2 &= c^2 \\ a^2 + (12)^2 &= (17)^2 \\ a^2 + 144 &= 289 \\ -144 &-144 \\ \hline a^2 &= 145 \\ a &= 12.0 \end{aligned}$$

7. Find the missing side:



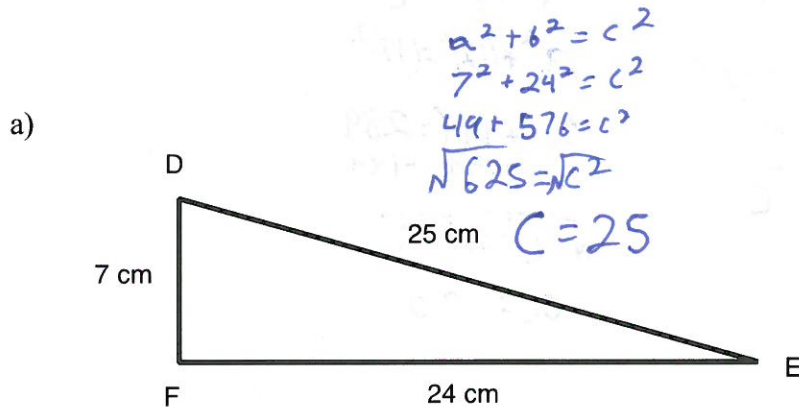
$$\begin{aligned} a^2 + b^2 &= c^2 \\ (45)^2 + b^2 &= (48)^2 \\ 2025 + b^2 &= 2304 \\ -2025 &-2025 \\ \hline b^2 &= 279 \\ b &= 16.7 \end{aligned}$$

8. Find the missing side:



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 6.8^2 + 22.1^2 &= c^2 \\ 46.24 + 488.41 &= c^2 \\ \sqrt{534.65} &= \sqrt{c^2} \\ c &= 23.1 \text{ cm} \end{aligned}$$

9. Is the triangle a right triangle? If it is then 25 should be $\sqrt{7^2 + 24^2}$



yes it is!

- b) A triangle with side lengths of 12 cm, 16 cm and 24 m.
 longest, hypotenuse.
 2400cm Probably not, too big!

$$12^2 + 16^2 = 2400^2$$

$$144 + 256 = 5760000$$

No!

10. Assignment:

- a) Worksheet "Pythagorean Theorem".

