

Answer Key

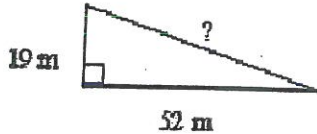
Worksheet: Pythagorean Theorem Problems

Show all your work. (Formula, what you plug in and final solution rounded to 2 decimal places.)

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- A 1. What is the measure of the missing length?

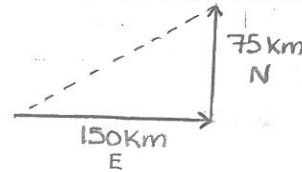


$$\begin{aligned} a^2 + b^2 &= c^2 \\ (19)^2 + (52)^2 &= c^2 \\ 361 + 2704 &= c^2 \\ 3065 &= c^2 \\ \sqrt{3065} &= c \\ c &= 55.36 \end{aligned}$$

- a. 55 m
b. 57 m
c. 63 m
d. 71 m

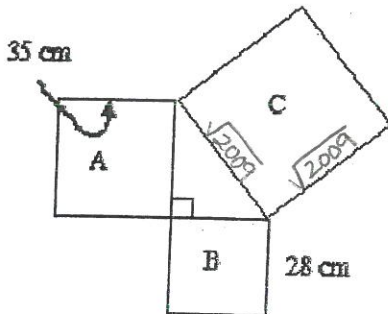
- B 2. Ms. Lange drove about 150 km east from La Sarre, to Senneterre, Quebec. She drove about another 75 km north to Lebel-sur-Quévillon. What is the approximate air distance from La Sarre to Lebel-sur-Quévillon, Quebec?

- a. 160 km
b. 168 km
c. 175 km
d. 225 km



$$\begin{aligned} (150)^2 + (75)^2 &= c^2 \\ 22500 + 5625 &= c^2 \\ 28125 &= c^2 \\ \sqrt{28125} &= c \\ 167.71 &= c \end{aligned}$$

- C 3. What is the area of Square C?

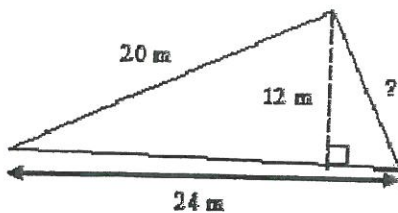


$$\begin{aligned} (35)^2 + (28)^2 &= c^2 \\ 1225 + 784 &= c^2 \\ 2009 &= c^2 \\ \sqrt{2009} &= c \\ c &= 44.82 \end{aligned}$$

$$\begin{aligned} \text{Area} &= (\sqrt{2009})^2 \\ &= 2009 \text{ cm}^2 \end{aligned}$$

- a. 90 cm²
b. 1960 cm²
c. 2009 cm²
d. 3969 cm²

- B 4. What is the measure of the missing length?

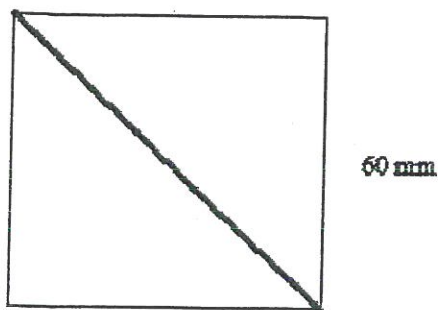


- a. 13 m
b. 14 m
c. 15 m
d. 16 m

$$\begin{aligned} a^2 + b^2 &= c^2 \\ a^2 + (12)^2 &= (20)^2 \\ a^2 + 144 &= 400 \\ a^2 &= 400 - 144 \\ a^2 &= 256 \\ a &= \sqrt{256} \\ a &= 16 \end{aligned}$$

$$\begin{aligned} 24 - 16 &= 8 \\ a^2 + b^2 &= c^2 \\ 8^2 + 12^2 &= c^2 \\ 64 + 144 &= c^2 \\ 208 &= c^2 \\ \sqrt{208} &= c \\ 14.42 &= c \end{aligned}$$

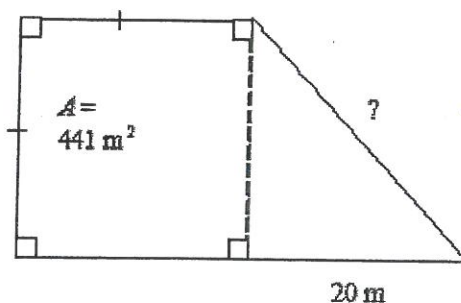
- D 5. What is the measure of the diagonal of the square to the nearest tenth of a millimetre?



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 (60)^2 + (60)^2 &= c^2 \\
 3600 + 3600 &= c^2 \\
 7200 &= c^2 \\
 \sqrt{7200} &= c \\
 c &= 84.85
 \end{aligned}$$

- a. 18.9 mm
 b. 60.0 mm
 c. 75.0 mm
d. 84.9 mm

- D 6. What is the measure of the hypotenuse?

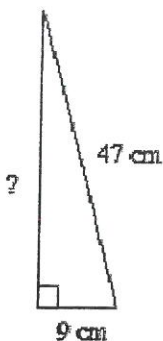


$$\begin{aligned}
 A &= (\text{side})^2 \\
 441 &= x^2 \\
 \sqrt{441} &= \sqrt{x^2} \\
 21 &= x \\
 \text{side} &= 21 \text{ m}
 \end{aligned}$$

$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 (20)^2 + (21)^2 &= c^2 \\
 400 + 441 &= c^2 \\
 841 &= c^2 \\
 \sqrt{841} &= c \\
 29 &= c \\
 29 \text{ m}
 \end{aligned}$$

- a. 13 m
 b. 20 m
 c. 20.5 m
d. 29 m

- C 7. What is the measure of the missing length to the nearest tenth of a centimetre?



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 (9)^2 + b^2 &= (47)^2 \\
 81 + b^2 &= 2209 \\
 b^2 &= 2209 - 81 \\
 b^2 &= 2128 \\
 b &= \sqrt{2128} \\
 b &= 46.13 \text{ cm}
 \end{aligned}$$

- a. 20.6 cm
 b. 28.0 cm
c. 46.1 cm
 d. 47.9 cm

- C 8. A ship's guidance system measures that the ship is 380 m from the top of a lighthouse. The top of the lighthouse is 88 m above sea level. How far is the ship from the lighthouse to the nearest tenth of a metre?

- a. 182.9 m
 b. 234.0 m
c. 369.7 m
 d. 390.1 m

$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 88^2 + b^2 &= 380^2 \\
 7744 + b^2 &= 144400 \\
 b^2 &= 144400 - 7744 \\
 b^2 &= 136656 \\
 b &= \sqrt{136656} \\
 b &\approx 369.67
 \end{aligned}$$