

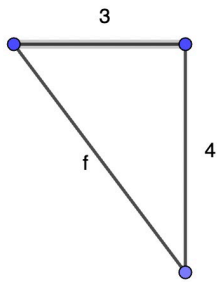
Name: _____

SM2 2.4: Pythagorean Theorem Review

Problems: (leave answers in exact form, unless you started with decimals, then round to the nearest tenth)

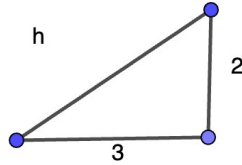
Find the missing side lengths of the right triangles using the Pythagorean Theorem. All pictured triangles are right triangles

1)



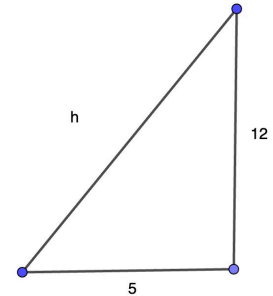
$$\begin{aligned}3^2 + 4^2 &= f^2 \\25 &= f^2 \\f &= \sqrt{25} \\f &= 5\end{aligned}$$

2)



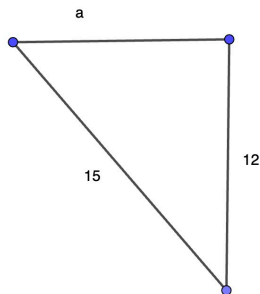
$$\begin{aligned}3^2 + 2^2 &= h^2 \\13 &= h^2 \\h &= \sqrt{13}\end{aligned}$$

3)



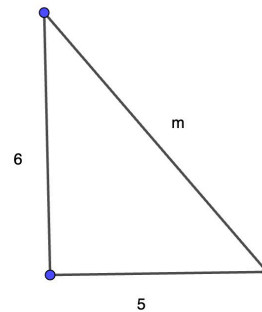
$$\begin{aligned}5^2 + 12^2 &= h^2 \\169 &= h^2 \\h &= \sqrt{169} \\h &= 13\end{aligned}$$

4)



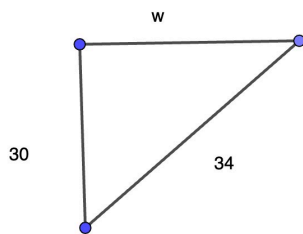
$$\begin{aligned}a^2 + 12^2 &= 15^2 \\a^2 &= 81 \\a &= \sqrt{81} \\a &= 9\end{aligned}$$

5)



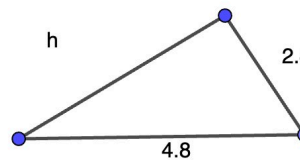
$$\begin{aligned}6^2 + 5^2 &= m^2 \\61 &= m^2 \\m &= \sqrt{61}\end{aligned}$$

6)



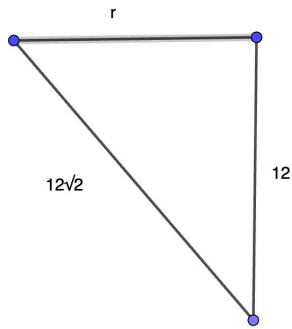
$$\begin{aligned}w^2 + 30^2 &= 34^2 \\w^2 &= 256 \\w &= \sqrt{256} \\w &= 16\end{aligned}$$

7)



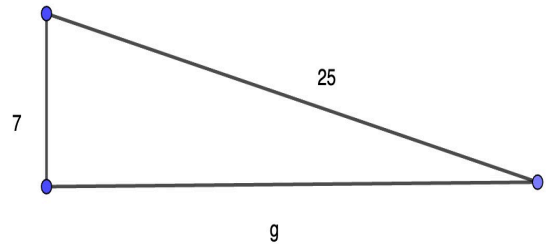
$$\begin{aligned}h^2 + 2.4^2 &= 4.8^2 \\h^2 &= 17.28 \\h &= \sqrt{17.28} \\h &= 4.2\end{aligned}$$

8)



$$\begin{aligned} r^2 + 12^2 &= 288 \\ r^2 &= 144 \\ r &= \sqrt{144} \\ r &= 12 \end{aligned}$$

9)



$$\begin{aligned} g^2 + 7^2 &= 25^2 \\ g^2 &= 576 \\ g &= \sqrt{576} \\ g &= 24 \end{aligned}$$

Application Problems: Round to the nearest tenth if needed.

- 10) Lucia needs to buy a ladder to reach her roof. The edge of the roof is 21.125 feet high. To use a ladder safely, the base of a ladder should be 1 foot away from a building for every 3.25 feet of building height. The ladder should extend 3 feet longer than the edge of the roof. How long does the ladder need to be?

21.125 feet high with distance of 1 foot for every 3.25 feet of height = 6.5 feet

$$l^2 = 6.5^2 + 21.125^2 = 488.515625$$

$$l = 22.1 \text{ feet}$$

Since the ladder extends an extra 3 feet, the length needs to be 25.1 feet.

- 11) Mr. Wytiaz is terrified of the recklessness of student drivers, particularly that of the kids in his 4th period class. When school ends, he normally waits for them to all drive away before he gets into his car. However, he's tired of waiting so long, so he decides to build a zip-line that runs from his window (which is 33 feet above the ground) to the faculty parking lot (which is 44 feet away from the building). How long does the zip line need to be?

$$z^2 = 33^2 + 44^2 = 3025$$

$$\text{zip line} = 55 \text{ feet}$$

- 12) In order to help his students exit the building quickly to take excursions in a nearby park, Mr. Wardell builds a slide that leaves the second floor of OHS and slants down to the side of the tennis court. The height of the second floor is 18 feet above the ground and the slide ends 20 feet away from the building. How long is the slide?

$$s^2 = 18^2 + 20^2 = 724$$

$$\text{slide} = 26.9 \text{ feet}$$