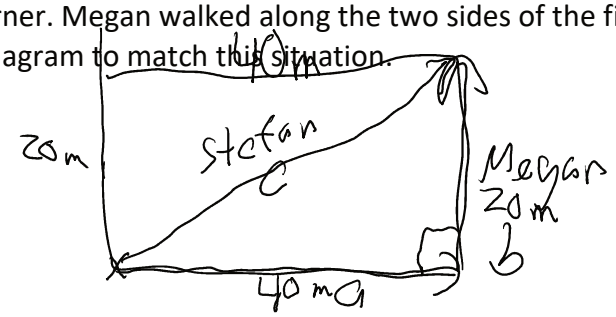
Date _____ Name _____

1.3B Applying the Pythagorean Relationship

1. A rectangular field measures 20 m × 40 m. Stefan walked along the diagonal from one corner to its far corner. Megan walked along the two sides of the field.

a) Draw a diagram to match this situation.



b) What is the distance Stefan walked? Give your answer to the nearest tenth of a metre.

$a^2 + b^2 = c^2$

$40^2 + 20^2 = c^2$

$1600 + 400 = c^2$

$2000 = c^2$

$c = \sqrt{2000}$

$= 44.7$ m

c) What is the distance Megan walked?

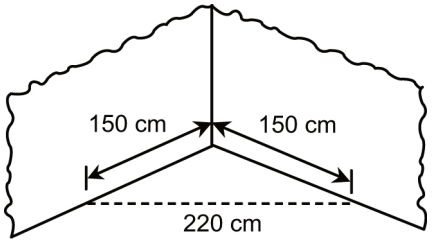
$40 + 20 = 60$ m

d) Which distance is shorter and by how much? Give your answer to the nearest tenth of a metre.

Stefan shorter by 15.3 m

$60 - 44.7 = 15.3$

2. Before Larissa's father builds the roof of a shed, he asks her to check if the walls meet at a right angle. She makes a mark at 150 cm from the corner on each wall. She measures the diagonal length as 220 cm. Do the walls meet at a right angle? Justify your response.



$a^2 + b^2 \stackrel{?}{=} c^2$

$150^2 + 150^2 \quad 220^2$

$22500 + 22500 \quad 48400$

$45000 \neq 48400$

∴ not a right angle

Practice: pg. 26/ # 5, 7, 8 – 10, 12 – 16, **20, 22**