

Key

Review for QUEST
Pythagorean Theorem, Distance Formula, and Multi-Step Equations

SECTION 1: PYTHAGOREAN THEOREM

1. Pythagorean Theorem equation: $a^2 + b^2 = c^2$

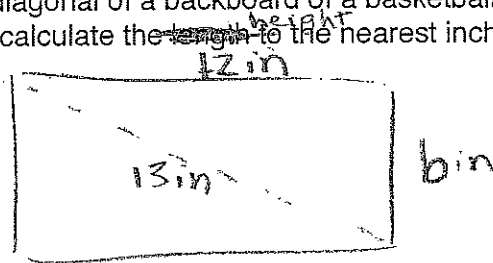
Determine whether or not the sides given make a right triangle. Justify your answer.

2. 32 ft., 20 ft., 52 ft.

$$32^2 + 20^2 = 52^2$$
$$1024 + 400 = 2704$$
$$1424 = 2704$$

NOT a right triangle

3. The diagonal of a backboard of a basketball hoop measures 13 inches, if the ~~height~~ height is 12 inches, calculate the ~~length~~ length to the nearest inch.



$$12^2 + b^2 = 13^2$$
$$144 + b^2 = 169$$
$$-144$$

$$b^2 = 25$$

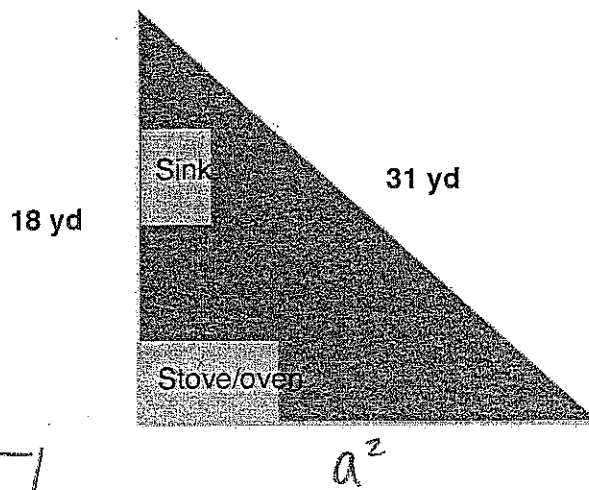
$b = 5$ in

4. Mr. Reardon wants to build a closed off kitchen in his house that is shaped like a right triangle, how much more dry-wall will he need to install to complete his kitchen? Round to the nearest tenth.

$$a^2 + 18^2 = 31^2$$
$$a^2 + 324 = 961$$

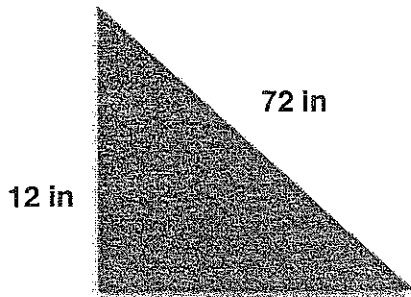
$$\sqrt{a^2} = \sqrt{637}$$

$a = 25.2$ yd



Solve for the missing side of the right triangles. Round to the nearest hundredth.

5.



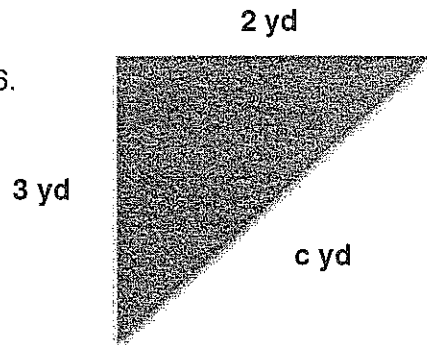
$$12^2 + b^2 = 72^2$$

$$144 + b^2 = 5,184$$

$$b^2 = 5,040$$

$$b = 71 \text{ in.}$$

6.



$$3^2 + 2^2 = c^2$$

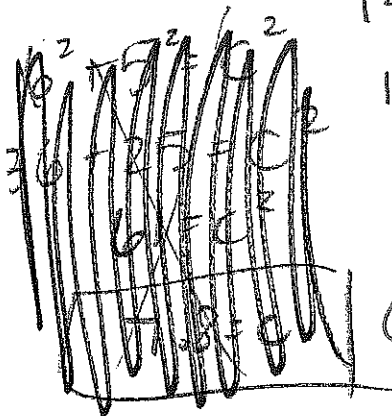
$$9 + 4 = c^2$$

$$13 = c^2$$

$$c = 3.61 \text{ yd}$$

For numbers 7 and 8 graph each pair of ordered pairs. Then find the distance between the two points using the PYTHAGOREAN THEOREM. Round to the nearest tenth if necessary.

7. (5, 2), (-1, 3)

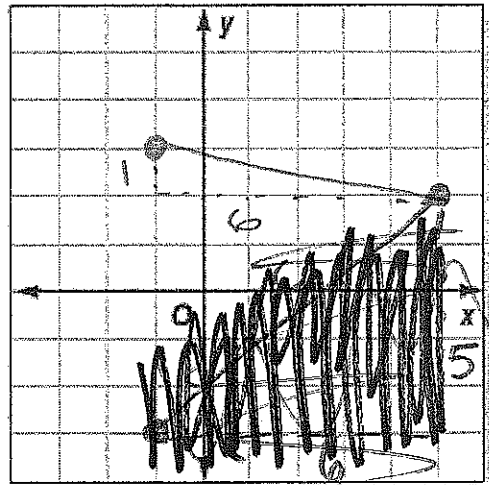


$$12 + 6^2 = c^2$$

$$1 + 36 = c^2$$

$$37 = c^2$$

$$c \approx 6.1$$



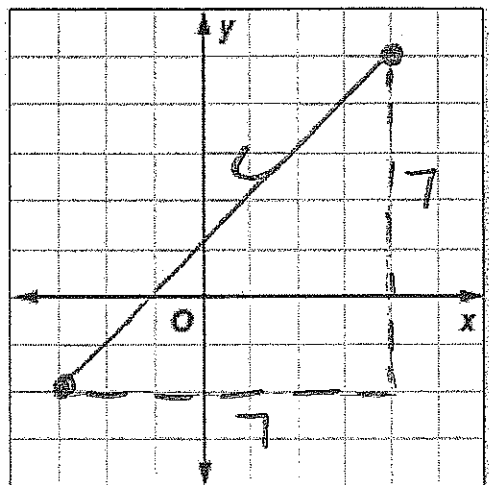
8. (-3, -2), (4, 5)

$$7^2 + 7^2 = c^2$$

$$49 + 49 = c^2$$

$$98 = c^2$$

$$9.9 = c$$



PART 2: DISTANCE FORMULA

9. The distance formula is:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

10. Calculate the distance between the two points A (7, 2) and B (12, 6)

$$d = \sqrt{(12 - 7)^2 + (6 - 2)^2}$$

$$d = \sqrt{(5)^2 + (4)^2}$$

$$d = \sqrt{25 + 16}$$

$$d = \sqrt{41}$$

~~distance~~

$$d \approx 6.4$$

For number 11 graph each pair of ordered pairs. Then find the distance between the two points using the DISTANCE FORMULA.

11. M (-2, 4), N (3, -3)

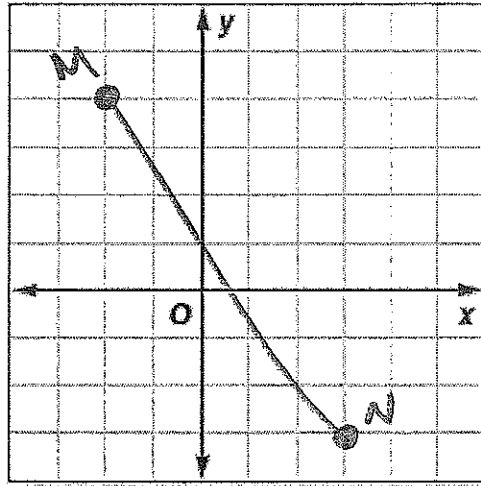
$$\sqrt{(3 - (-2))^2 + (-3 - 4)^2}$$

$$\sqrt{(5)^2 + (-7)^2}$$

$$\sqrt{25 + 49}$$

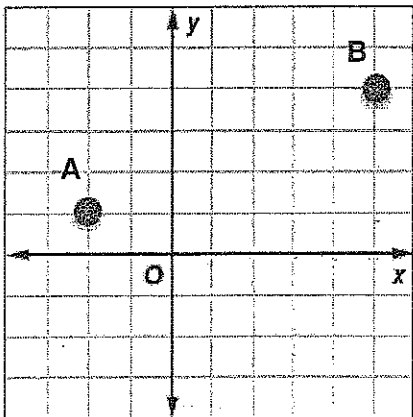
$$\sqrt{74}$$

$$d = 8.6$$



For numbers 12 and 13 find the distance between the two points.

12.



$$(-2, 1)$$

$$(5, 4)$$

$$\sqrt{(5 - (-2))^2 + (4 - 1)^2}$$

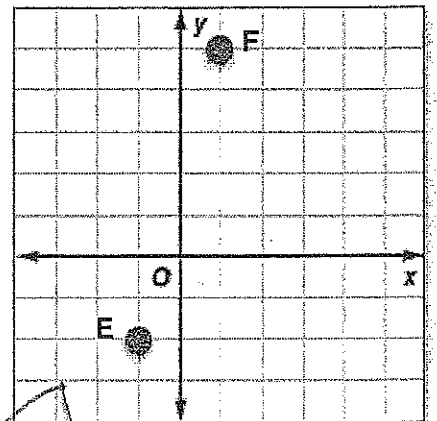
$$\sqrt{7^2 + 3^2}$$

$$\sqrt{49 + 9}$$

$$\sqrt{58}$$

$$d = 7.6$$

13.



$$(-1, -2)$$

$$(1, 5)$$

$$d = 7.3$$

$$\sqrt{(1 - (-1))^2 + (5 - (-2))^2}$$

$$\sqrt{2^2 + 7^2} \rightarrow \sqrt{53}$$