



Warm Up Grade 8

Tuesday, Jan. 19, 2016

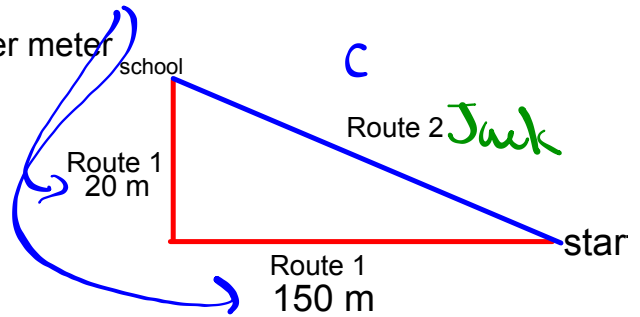
Similar to #9 on test



1) Jack and Ted have competing paving companies. The school wants to hire the one of the companies to pave a path to school. They have two choices;

Ted travels along route 1 but charges \$20 per meter

Jack travels along route 2 but charges \$22 per meter



a) How much does Ted charge?

$$\begin{aligned} \text{Route 1} &= 150 + 20 \\ &= 170\text{m} \\ &\quad \times 20 \\ &\hline & \$ 3400 \end{aligned}$$

b) How much will Jack Charge? (Requires more work than part a)

$$\begin{aligned} c^2 &= a^2 + b^2 \\ c^2 &= (20)^2 + (150)^2 \\ c^2 &= 400 + 22500 \\ c^2 &= 22900 \text{ m}^2 \end{aligned}$$

c) Who has the better deal for the school?

$$c = \sqrt{22900 \text{ m}^2}$$

$$\rightarrow c \approx 151.32 \text{ m}$$

$$\begin{aligned} &\quad \times 22 \\ &\quad \hline & 30264 \\ & 302640 \\ &\hline \$ & 3329.04 \end{aligned}$$

Jack
since
he
charges
less

$$\begin{array}{ccc} & \sqrt{20} & \\ & \swarrow & \searrow \\ \sqrt{16} & & \sqrt{25} \\ \Downarrow & & \Downarrow \\ 4 & & 5 \\ & \approx 4.4 & \end{array}$$



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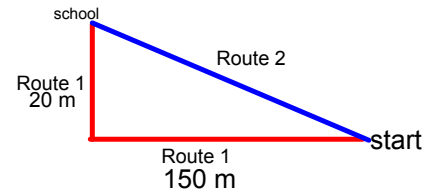


solution

1) Jack and Ted have competing paving companies. The school wants to hire the one of the companies to pave a path to school. They have two choices;

Ted travels along route 1 but charges \$20 per meter

Jack travels along route 2 but charges \$22 per meter



a) How much does Ted charge?

$$\begin{array}{r} 20 \text{ m} + 150 \text{ m} = 170 \text{ m} \\ \times \$20 \\ \hline \$3400 \end{array} \quad \text{Ted charges } \$3400$$

b) How much will Jack Charge? (Requires more work than part a)

Need to find route 2 ...THE Hypotenuse

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

$$c^2 = (150 \text{ m})^2 + (20 \text{ m})^2$$

$$c^2 = 22\,500 \text{ m}^2 + 400 \text{ m}^2$$

$$c^2 = 22\,900 \text{ m}^2$$

$$c = \sqrt{22\,900 \text{ m}^2}$$

$$c = 151.3 \text{ m}$$

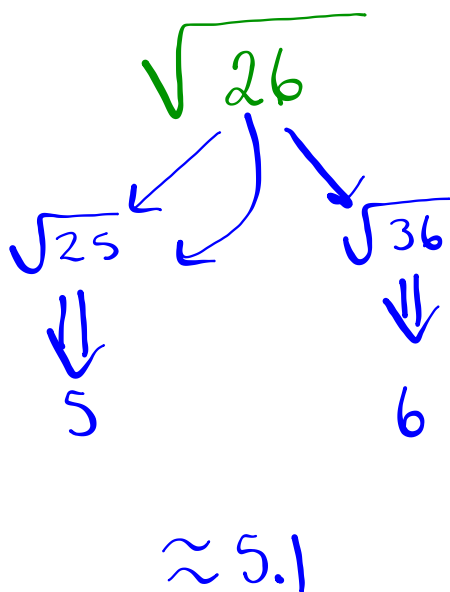
$$151.3 \times \$22 = \$3328.60$$

Jack Charges
\$3328.60

c) Who has the better deal for the school?

Jack is the better deal. He charges \$71.40 cheaper.

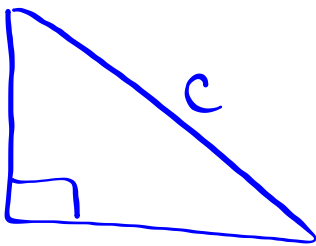
$$\$3400 - \$3328.60 = \$71.40$$



- $1^2 = 1$
- $2^2 = 4$
- $3^2 = 9$
- $4^2 = 16$
- $5^2 = 25$
- $6^2 = 36$
- $7^2 = 49$
- $8^2 = 64$
- $9^2 = 81$
- $10^2 = 100$
- $11^2 = 121$
- $12^2 = 144$
- $13^2 = 169$
- $14^2 = 196$
- $15^2 = 225$

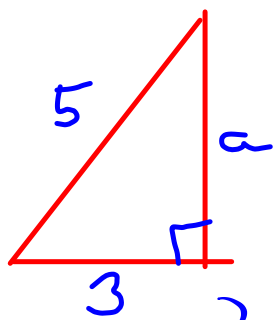
- $\sqrt{1} = 1$
- $\sqrt{4} = 2$
- $\sqrt{9} = 3$
- $\sqrt{16} = 4$
- $\sqrt{25} = 5$
- $\sqrt{36} = 6$
- $\sqrt{49} = 7$
- .
- .
- .
- .
- .
- $\sqrt{225} = 15$

$$c^2 = 110$$
$$c = \sqrt{110}$$
$$\begin{array}{cc} \sqrt{100} & \sqrt{121} \\ \Downarrow & \Downarrow \\ 10 & 11 \end{array}$$
$$\approx 10.5$$
$$\approx 10.47$$



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

6.

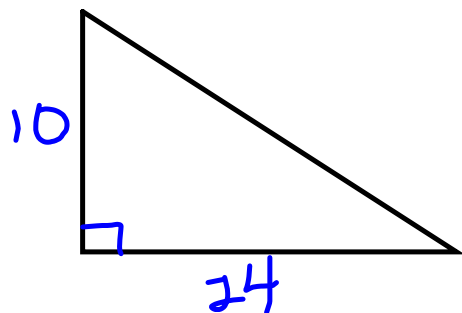


$$\begin{aligned} a^2 &= c^2 - b^2 \\ &= 5^2 - 3^2 \\ &= 25 - 9 \\ c^2 &= 16 \\ c &= \sqrt{16} \\ c &= 4 \end{aligned}$$

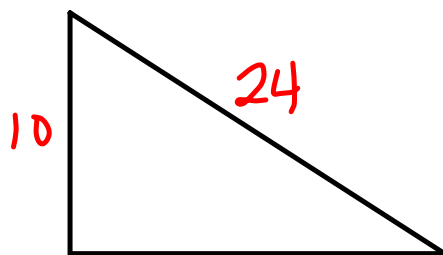
$$\begin{aligned} c^2 &= a^2 + b^2 \\ 5^2 &= a^2 + 3^2 \\ 25 &= a^2 + 9 \\ 25 - 9 &= a^2 + 9 - 9 \\ 16 &= a^2 \\ \sqrt{16} &= \sqrt{a^2} \\ 4 &= a \end{aligned}$$

The ladder reaches up 4 m.

7.



$$\begin{aligned} c^2 &= a^2 + b^2 \\ c^2 &= 10^2 + 24^2 \\ c^2 &= 100 + 576 \\ c^2 &= 676 \\ \sqrt{c^2} &= \sqrt{676} \\ c &= 26 \end{aligned}$$

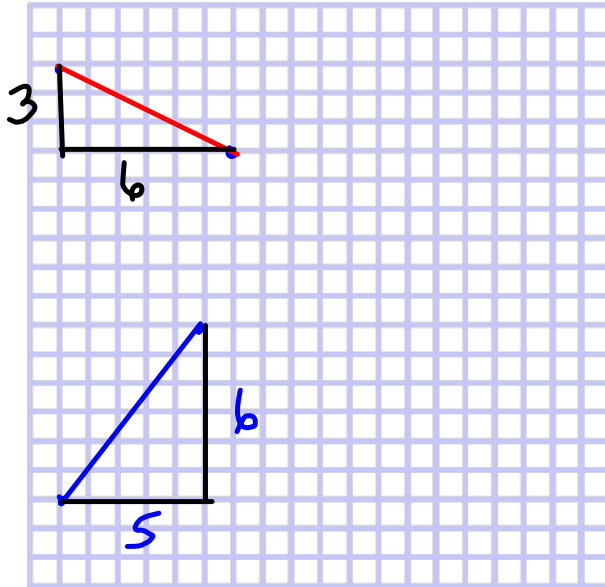


$$\begin{aligned} c^2 &= a^2 + b^2 \\ 24^2 &= a^2 + 10^2 \\ 576 &= a^2 + 100 \\ 576 - 100 &= a^2 + 100 - 100 \\ 476 &= a^2 \\ \sqrt{476} &= \sqrt{a^2} \\ 21.8 &= a \end{aligned}$$

b) 2 answers are possible because it doesn't say if 24 is one leg or the hypotenuse.

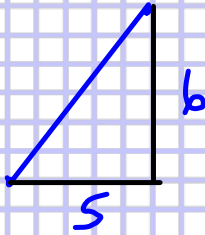
8

a)



$$\begin{aligned} a) \quad c^2 &= a^2 + b^2 \\ c^2 &= 3^2 + 6^2 \\ c^2 &= 9 + 36 \\ c^2 &= 45 \\ \sqrt{c^2} &= \sqrt{45} \\ c &= 6.7 \end{aligned}$$

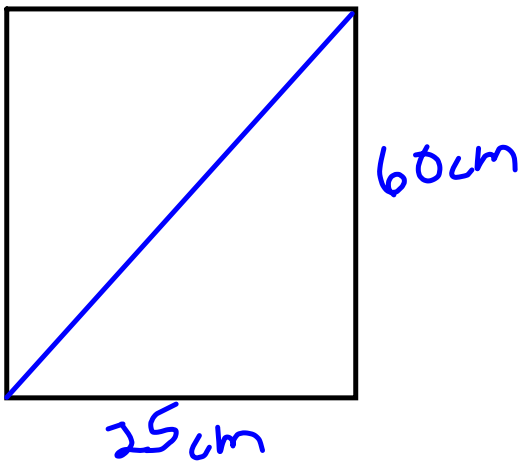
b)



$$\begin{aligned} c^2 &= a^2 + b^2 \\ c^2 &= 5^2 + 6^2 \\ c^2 &= 25 + 36 \\ c^2 &= 61 \\ \sqrt{c^2} &= \sqrt{61} \\ c &= 7.8 \end{aligned}$$

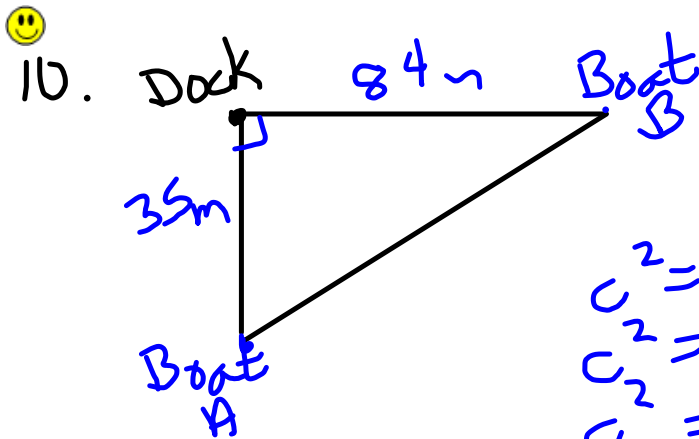
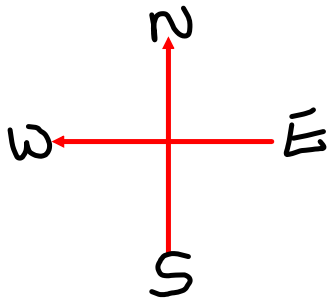


9.



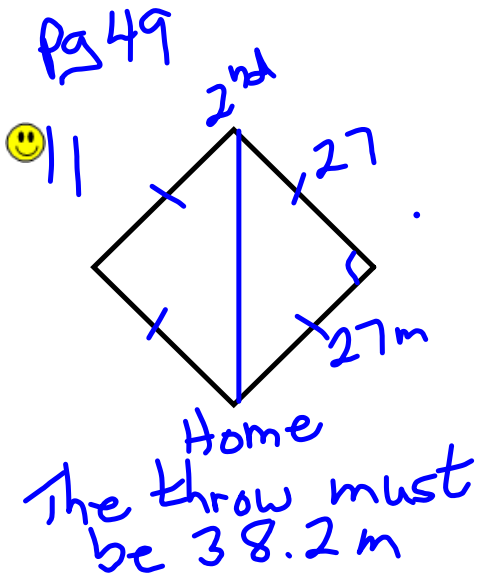
$$\begin{aligned} c^2 &= a^2 + b^2 \\ c^2 &= 25^2 + 60^2 \\ c^2 &= 625 + 3600 \\ c^2 &= 4225 \\ \sqrt{c^2} &= \sqrt{4225} \\ c &= 65 \end{aligned}$$

The diagonal should be 65cm



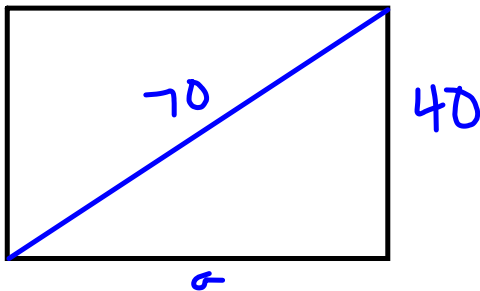
$$\begin{aligned}
 c^2 &= a^2 + b^2 \\
 c^2 &= 35^2 + 84^2 \\
 c^2 &= 1225 + 7056 \\
 c^2 &= 8281 \\
 \sqrt{c^2} &= \sqrt{8281} \\
 c &= 91\text{m}
 \end{aligned}$$

The boats
are 91m apart



$$\begin{aligned}
 c^2 &= a^2 + b^2 \\
 c^2 &= 27^2 + 27^2 \\
 c^2 &= 729 + 729 \\
 c^2 &= 1458 \\
 \sqrt{c^2} &= \sqrt{1458} \\
 c &= 38.2 \text{ m}
 \end{aligned}$$

13.



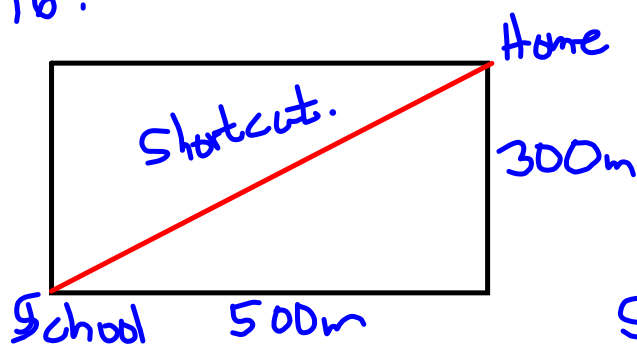
$$\begin{aligned}
 c^2 &= a^2 + b^2 \\
 70^2 &= a^2 + 40^2 \\
 4900 &= a^2 + 1600 \\
 4900 - 1600 &= a^2 + 1600 - 1600 \\
 3300 &= a^2 \\
 \sqrt{3300} &= \sqrt{a^2} \\
 57.4 &= a \\
 &\text{cm}
 \end{aligned}$$

The length is 57.4 cm

14. To get from A to B, you move right 4 and up 3.

To get from A to F, you move down 3 and left 4, so F is the same distance from A as B is.

😊
16.



$$c = 5.8$$

Joanna normally
walks 800m

Short cut

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

$$c^2 = 300^2 + 500^2$$

$$c^2 = 9000 + 25000$$

$$c^2 = 34000$$

$$\sqrt{c^2} = \sqrt{34000}$$

$$c = 583$$

$$\begin{array}{r} 79 \\ 800 \\ -583 \\ \hline 217 \end{array}$$

The shortcut is 217m shorter

Unit 1: Square Roots & Pythagorean Theorem

Must know perfect squares from $1^2 = 1$

$$2^2 = 4$$

up to

$$15^2 = 225$$

Memorized

$$a) 36 = 6^2$$

$$b) 81 = 9^2$$

$$c) 7^2$$

$$d) 27 \times \text{Not Perfect}$$

Calculating Perfect squares using ~~*~~ Prime Factorization (5 pts)

Product of Perfect Squares (2 or 3 pt)

Using Area of a square can you find side length and perimeter

Estimation of square roots of non-perfect squares

$$\begin{array}{l} \sqrt{79} \\ \sqrt{64} \quad \sqrt{81} \\ \downarrow \quad \downarrow \\ 8 \quad 9 \\ \approx 8.7 \end{array}$$

Determine if 3 numbers are a Pythagorean triple

Given a right triangle find the missing side length

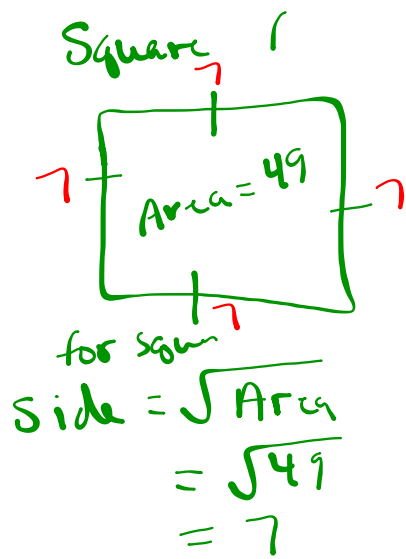
Given a rectangle can you find a missing side or diagonal

Question similar to warmup

NO CALCULATORS

~~5~~ Multiple choice

9 Long response



$$\begin{aligned} \text{Perimeter} &= s + s + s + s \\ &= 7 + 7 + 7 + 7 \\ &= 28 \end{aligned}$$

Use prime factorization

$$\sqrt{1600}$$

$$= \sqrt{(2 \times 2) \times (2 \times 2) \times (2 \times 2) \times (5 \times 5)}$$

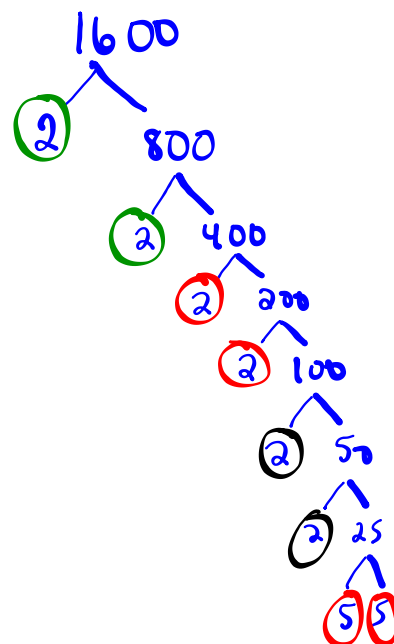
$$= \sqrt{2 \times 2} \times \sqrt{2 \times 2} \times \sqrt{2 \times 2} \times \sqrt{5 \times 5}$$

$$= 2 \times 2 \times 2 \times 5$$

$$= 4 \times 2 \times 5$$

$$= 8 \times 5$$

$$= 40$$



product of perfect squares

$$\sqrt{900}$$

$$= \sqrt{9} \times \sqrt{100}$$

$$= \downarrow \downarrow 3 \times 10$$

$$= 30$$



Worksheet: Unit 1 Test Review



Complete all questions on the worksheet

Unit 1 Test

Thursday, Jan. 21

STUDY

Attachments

gr 8 u1 sqre test REVIEW WORKSHEET.doc