Rules for Multiplication & Division

(-) x (-) = (+)

(+) x (+) = (+)

Both signs the same then the answer is (+)

(-) x (+) = (-)

(+) x (-) = (-)

Signs different then the answer is (-)

(-) ÷ (-) = (+)

(+) ÷ (+) = (+)

(-) ÷ (+) = (-)

(+) ÷ (-) = (-)

You Try

1) Use rules

a) (-7) (-11) (+77)

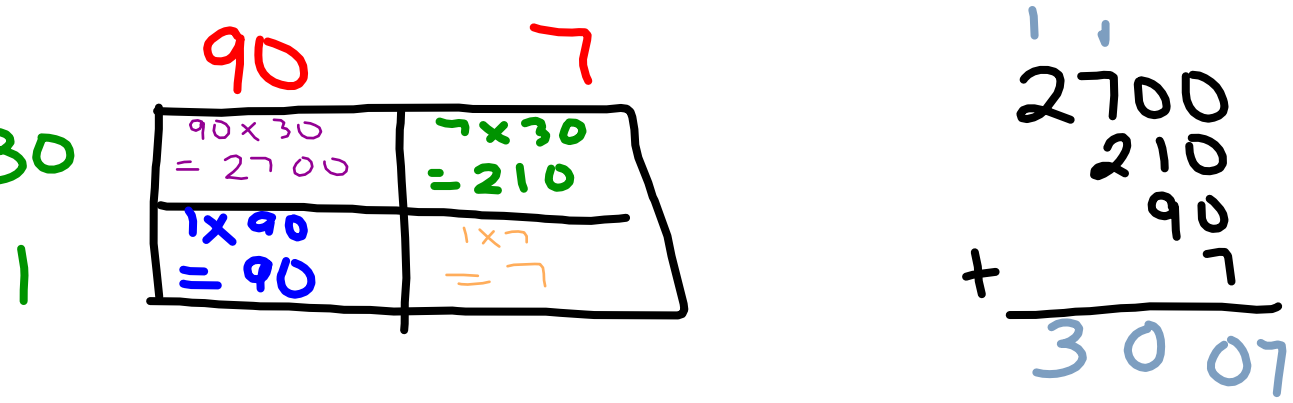
b) (-56)÷(-2) (+28)

c) (+14) x (-2) (-28)

d) (+24)÷(-4) (-6)

2) Find the product using the distributive property box method

(-97) x (-31) = (+3007)



3) Circle all the incorrect statements below and make corrections

(-35)÷ 7 = 5 → -5

(-12) x (-3) = (36)

(-20) x (+2) = (-10) → -40

$\frac{(24)}{-3} = (-8)$

(4) (-11) = (44) → -44

(-6) x (+7) = (-42)

Two types of Probability

Theoretical Probability - is what is expected to happen based on theory of math. Use a formula. (Today we are doing this)

$$P(\text{event}) = \frac{\text{\# of favorable outcomes}}{\text{Total \# of possible outcomes}}$$

Ex) P(head on coin) = $\frac{\text{\# of heads}}{\text{Total sides of coin}} = \frac{1}{2}$

Must write out Probability Statements for questions

Experimental Probability - is found by repeating an experiment and observing the outcomes. (Doing it out....not today)

$$P(\text{event}) = \frac{\text{number of times event occurs}}{\text{total number of trials}}$$

Example:
A coin is tossed 10 times:
A head is recorded 7 times
and a tail 3 times.

$$P(\text{head}) = \frac{7}{10}$$

$$P(\text{tail}) = \frac{3}{10}$$

We will focus on Theoretical Probability unless they give you the experimental data.

In word problems some words that can be used to suggest an event is INDEPENDENT is:

Replace or returned

$$P(A \text{ and } B \text{ and } C \text{ and } D)$$

$$= P(A) \times P(B) \times P(C) \times P(D)$$

Your Turn

Total = 5 + 3 + 2 + 10 = 20

Ex 3) A bag contains 5 orange marbles, 3 pink marbles, 2 green marbles and 10 Blue marbles

a) What is the probability of orange? (as fraction and percent)

$P(\text{orange}) = \frac{\#\text{orange}}{\text{Total}} = \frac{5}{20}$ Reduce $\frac{1}{4} = 25\%$

$\times 25$, $\frac{25}{100}$

b) What is the probability of pink? (as fraction and percent)

$P(\text{pink}) = \frac{\#\text{pink}}{\text{Total}} = \frac{3}{20} \times 5 = \frac{15}{100} = 15\%$

$\times 5$

c) What is the probability of picking 3 marbles and all three are green?

$P(3\ \text{Green}) = P(\text{Green}) \times P(\text{Green}) \times P(\text{Green})$

$= \frac{2}{20} \times \frac{2}{20} \times \frac{2}{20}$ Reduce

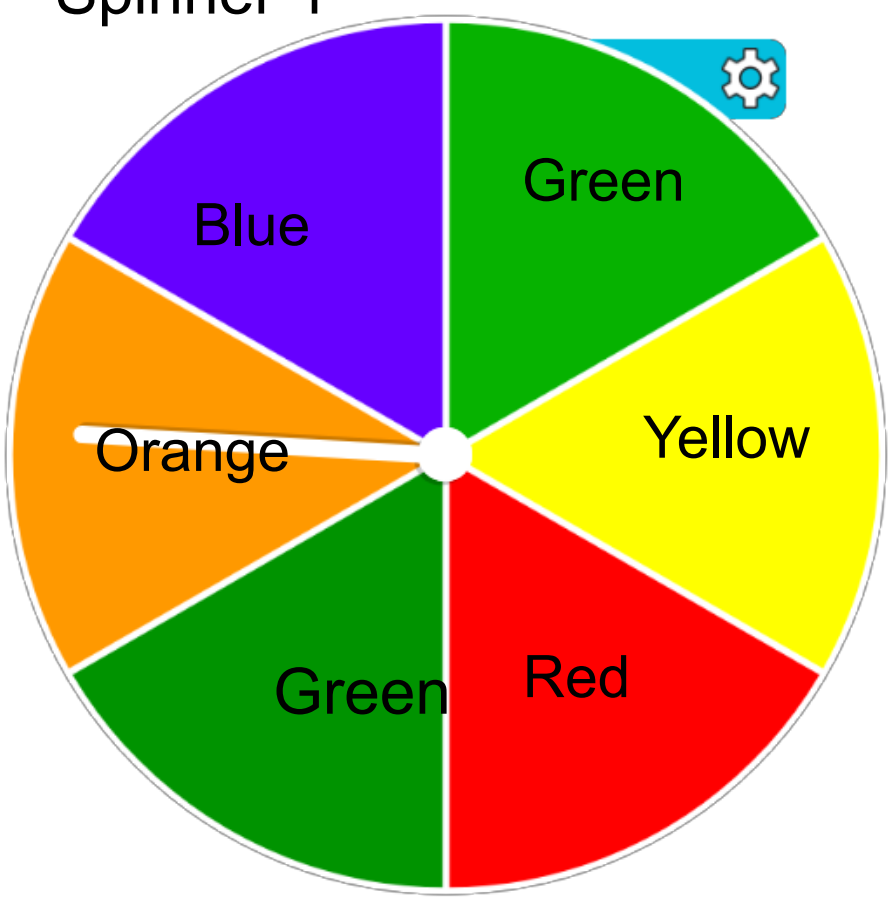
$= \frac{1}{10} \times \frac{1}{10} \times \frac{1}{10}$

$= \frac{1}{1000}$

$= 0.001$

$= 0.1\%$

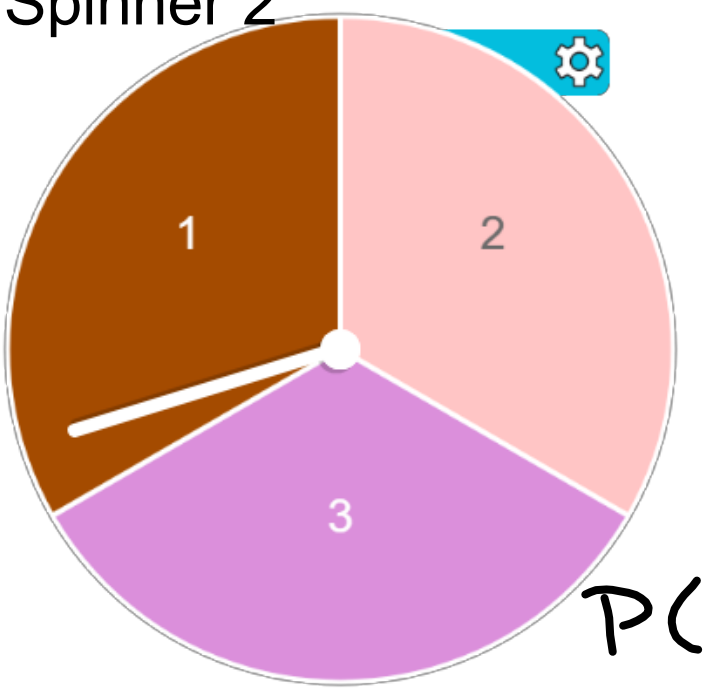
Spinner 1



1) What is the probability of spinning the spinner 1, twice and getting red and a green?

$$P(\text{Red and Green}) = P(R) \times P(G)$$
$$= \frac{1}{6} \times \frac{2}{6}$$
$$= \frac{2}{36}$$
$$= \frac{1}{18}$$

Spinner 2



2) Petter spins the pointer on each spinner shown to the left at the same time. What is the theoretical probability of landing on yellow on the first spinner and 3 on the second spinner?

$$P(\text{Yellow And } 3) = P(\text{Yellow}) \times P(3)$$
$$= \frac{1}{6} \times \frac{1}{3}$$
$$= \frac{1}{18}$$

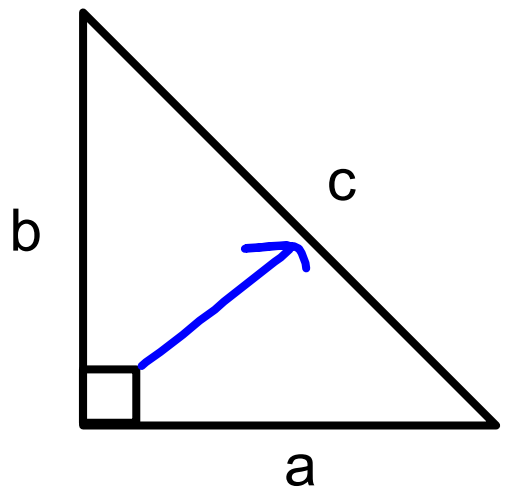
Pythagorean Theorem

- Right Angle Triangle has one angle that 90^o

- the side directly across to the right angle is always the longest side, it is the **hypotenuse.**

We use "c" for the hypotenuse

- Legs are side "a" and "b"



Pythagorean Theorem Equation:

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

area of the square off the hypotenuse

$$(c)^2 - (b)^2 = (a)^2$$

area of the square off the leg

Pythagorean Triples:

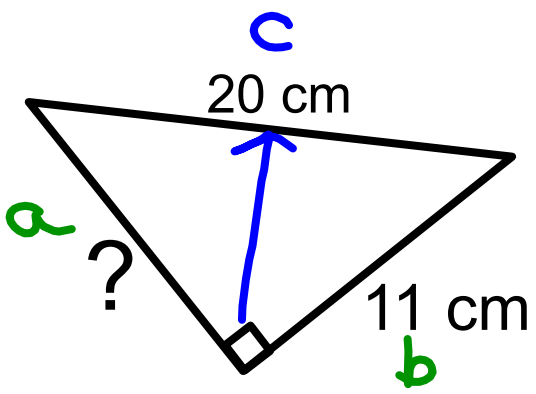
Given 3 numbers

$$(c)^2 \left\{ \right. \; (a)^2 + (b)^2$$

Find the length of the missing side

(Use calculators but show your work)

a)



$a^2 = c^2 - b^2$

$a^2 = (20cm)^2 - (11cm)^2$

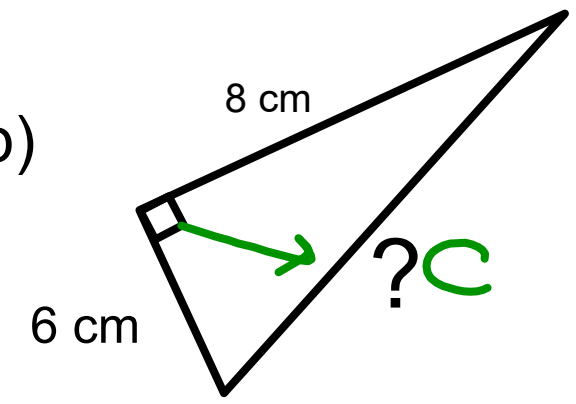
$a^2 = 400cm^2 - 121cm^2$

$a^2 = 279cm^2$

$\sqrt{a^2} = \sqrt{279cm^2}$

$a = 16.7cm$

b)



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

$c^2 = (6cm)^2 + (8cm)^2$

$c^2 = 36cm^2 + 64cm^2$

$c^2 = 100cm^2$

$\sqrt{c^2} = \sqrt{100cm^2}$

$c = 10cm$

Fill in the blanks

Sign same

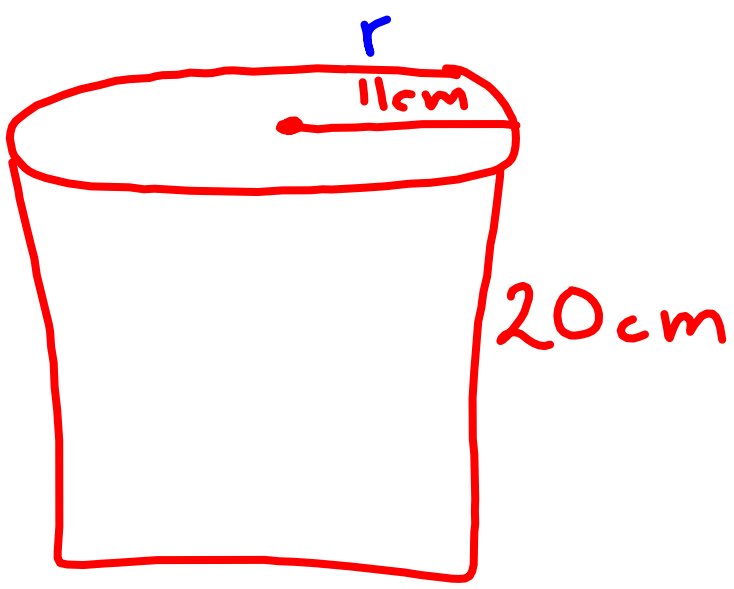
1) (-9) x (-8) = (+72)

2) (-28) ÷ (+4) = (-7)

3) (+60) ÷ (-5) = (-12)

Division can be written...

$$\frac{(-150)}{(+25)} = (-6)$$



Find Surface Area

$$SA = 2\pi r^2 + 2\pi r H$$

$$= (2)(3.14)(11cm)^2 + 2(3.14)(11cm)(20cm)$$

$$= (2)(3.14)(121cm^2) + 2(3.14)(11cm)(20cm)$$

$$= 759.88cm^2 + 1381.6cm^2$$

$$= \boxed{2141.48cm^2}$$

Find Volume

$$V = \pi r^2 H$$

$$= (3.14)(11cm)^2(20cm)$$

$$= (3.14)(121cm^2)(20cm)$$

$$= \boxed{7598.8\ cm^3}$$

WS

17 Evaluate.

a) $(+9) \times (+10)$ **b)** $(+6) \times (-11)$ **c)** $(+96) \div (-16)$

d) $(+39) \div (+3)$ **e)** $(-8) \times (+6)$ **f)** $(-36) \div (+9)$

g) $(-44) \div (-4)$ **h)** $(-5) \times (-1)$

18) Find the missing term

a) ___ · (-6) = (-10)

b) (+4___ = (-4)

c) (+24) ÷ ___ = (-6)

c) (+48___ = (+4)

d) (+14) x (-2) =_

(-15) x ____ = (+105)

f) ___ ÷ (-10) = (-5)

g) (-18) x (-4)

h) (-54) ÷ _ ___ = (+9)

i) (___) ÷ (-12) = (+96)

Quiz & Worksheet - Formula for Independent Events in Probability

WS

1. A bag contains 6 red, 2 yellow, and 7 orange marbles. What is the probability of drawing two red marbles out of the bag (with replacement)?

- 2/5
- 3/5
- 4/25
- 1/7

2. A jar contains 4 yellow, 3 blue, 5 orange, and 8 black balls. What is the probability of reaching into the jar and pulling out a blue and an orange ball (with replacement)?

- 3/80
- 1/5
- 3/76
- None of the answers are correct.

3.
What is the probability of the following compound event involving a coin and a standard die?

P (Heads , Odd #)

- 3/4
- 1/2
- 0
- 1/4

Quizizz

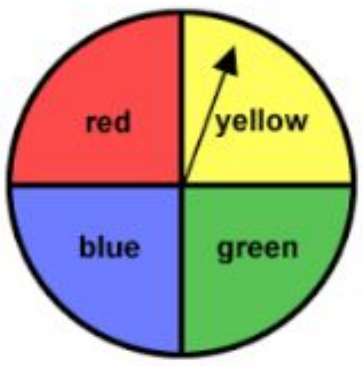
NAME : _____

CLASS : _____

DATE : _____

Compound Probability
10 Questions

WS

1. 

Ricardo has the spinner pictured here and a bag of marbles filled with 2 red marbles, 3 green marbles, and 3 blue marbles. What is the probability that Ricardo spins red on the spinner and picks a red marble out of the bag?

A 1/2

B 1/8

C 1/4

D 1/16

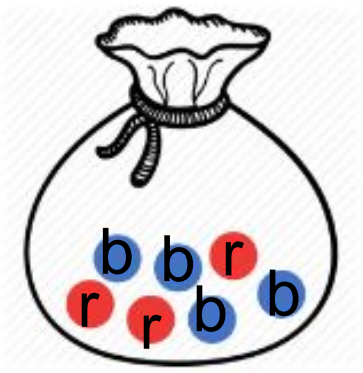
2. How many outcomes are there with tossing a coin and rolling a dice?

A 2

B 24

C 6

D 12

3. 

What is the probability of picking a blue marble, putting it back in the bag, then picking a red marble?

A $\frac{3}{7} \times \frac{3}{7}$

B $\frac{4}{7} \times \frac{3}{6}$

C $\frac{4}{7} \times \frac{3}{7}$

D $\frac{4}{7} \times \frac{4}{7}$

4. 

If you spin two times, what is the probability of landing on green both times?

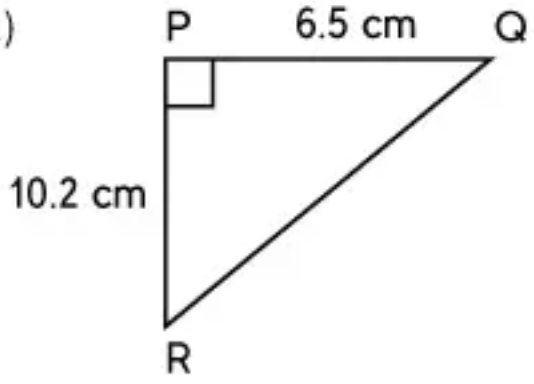
Name: _____ Date: _____

MATH MONKS

WS Pythagoras' Theorem Worksheet

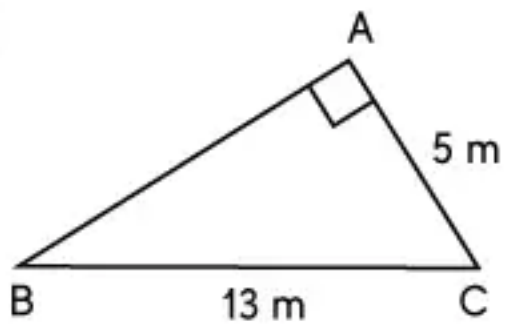
Find the lengths of the unknown sides in the given right triangles.

1)



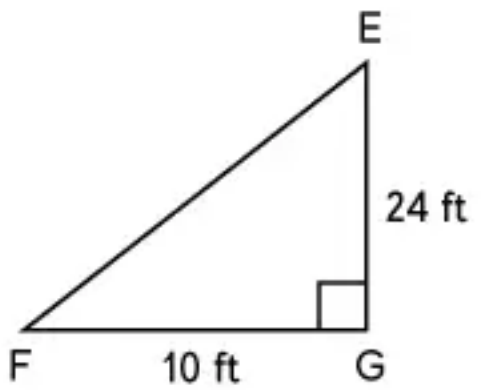
QR = _____

2)



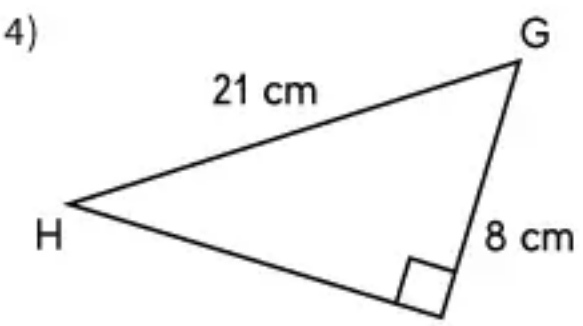
AB = _____

3)



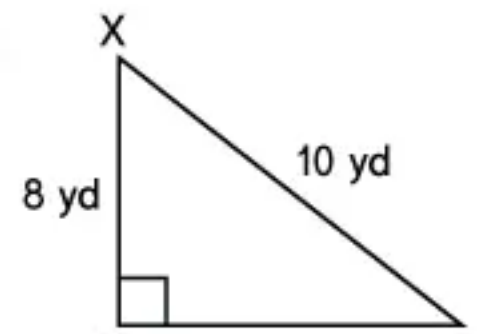
EF = _____

4)

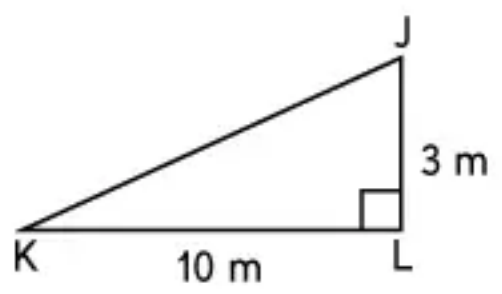


L

5)



6)

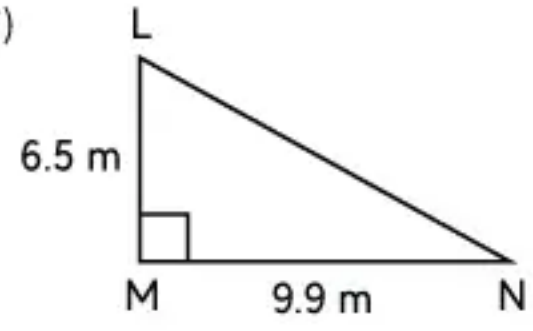


HL = _____

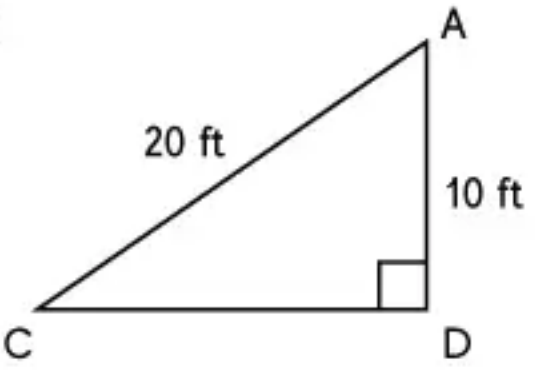
YZ = _____

KJ = _____

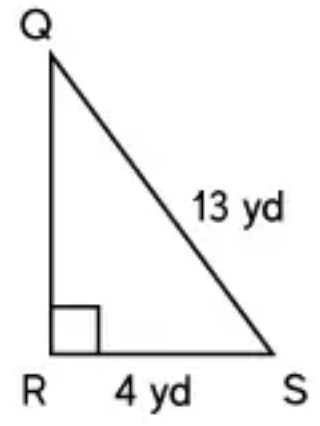
7)



8)



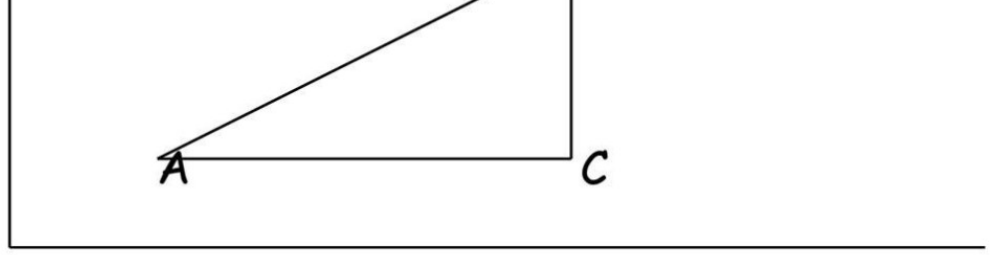
9)



LN = _____

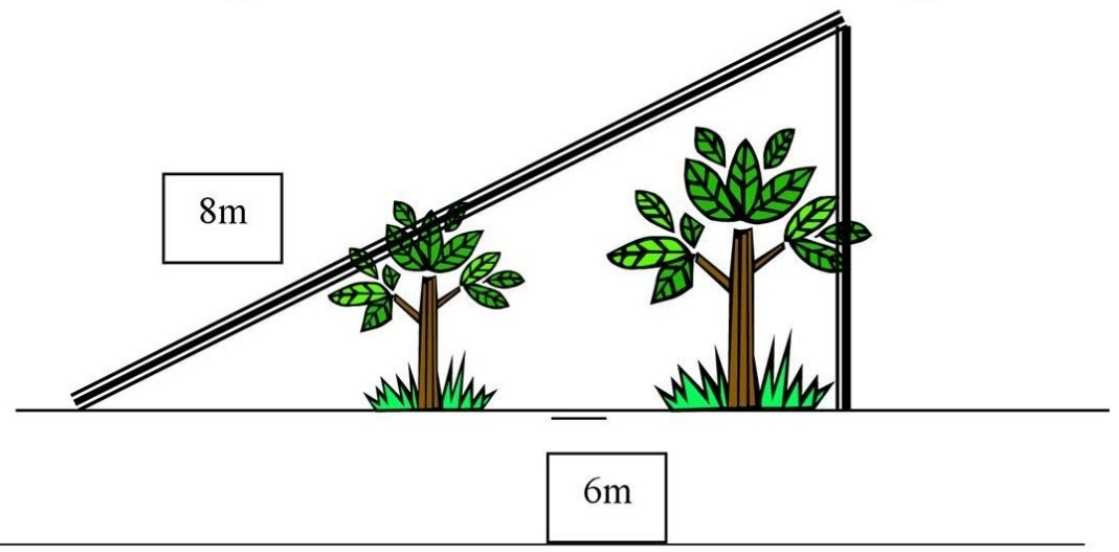
CD = _____

QR = _____



Q3) A ladder if 8 metres long . It leans against a wall with one end on the ground 6 metre from the wall. The other end just reaches a windowsill. Calculate the height of the windowsill above the ground.

WS



Determine whether each set of numbers is a Pythagorean triple.

1) 6, 8, 10

2) 16, 7, 3

3) 32, 21, 26

4) 20, 25, 15

WS SOLUTION

17 Evaluate.

a) $(+9) \times (+10)$ =(+90) b) $(+6) \times (-11)$ =(-66) c) $(+96) \div (-16)$ =(-6)

d) $(+39) \div (+3)$ =(+13) e) $(-8) \times (+6)$ =(-48) f) $(-36) \div (+9)$ =(-4)

g) $(-44) \div (-4)$ =(+11) h) $(-5) \times (-1)$ =(+5)

18) Find the missing term

a) (+60) ÷ (-6) = (-10)

b) (+44) ÷ (-11) = (-4)

c) (+24) ÷ (-4) = (-6)

c) (+48) ÷ (+12) = (+4)

d) (+14) x (-2) = (-28)

e) (-15) x (-7) = (+105)

f) (+50) ÷ (-10) = (-5)

g) (-18) x (-4) = (+72)

h) (-54) ÷ (-6) = (+9)

i) (-1152) ÷ (-12) = (+96)

Study.com

Quiz & Worksheet - Formula for Independent Events in Probability

WS

WS SOLUTION

1. A bag contains 6 red, 2 yellow, and 7 orange marbles. What is the probability of drawing two red marbles out of the bag (with replacement)?

- 2/5
- 3/5
- 4/25
- 1/7

P(Red) × P(Red)

$\frac{6}{15} \times \frac{6}{15}$

$\frac{2}{5} \times \frac{2}{5}$

$\frac{4}{25}$

2. A jar contains 4 yellow, 3 blue, 5 orange, and 8 black balls. What is the probability of reaching into the jar and pulling out a blue and an orange ball (with replacement)?

- 3/80
- 1/5
- 3/76
- None of the answers are correct.

P(Blue) × P(orange)

$\frac{3}{20} \times \frac{5}{20}$

$\frac{15}{400}$

OR $\frac{3}{20} \times \frac{1}{4}$

$\frac{3}{80}$

3. What is the probability of the following compound event involving a coin and a standard die?

P (Heads , Odd #)

- 3/4
- 1/2
- 0
- 1/4

P(Heads) × P(odd on Die)

$\frac{1}{2} \times \frac{3}{6}$

$\frac{1}{2} \times \frac{1}{2}$

$\frac{1}{4}$

Quizizz

NAME: _____

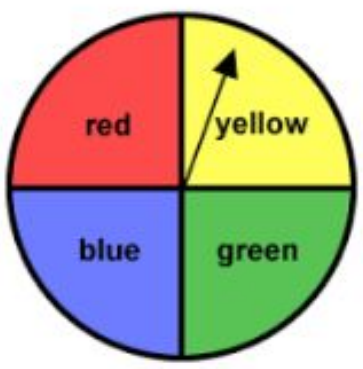
CLASS: _____

DATE: _____

Compound Probability
10 Questions

WS SOLUTION

WS

1. 

Ricardo has the spinner pictured here and a bag of marbles filled with 2 red marbles, 3 green marbles, and 3 blue marbles. What is the probability that Ricardo spins red on the spinner and picks a red marble out of the bag?

P(Red spinner) × P(Red marble)

$\frac{1}{4} \times \frac{2}{8}$ Reduce

$\frac{1}{4} \times \frac{1}{4}$

$\frac{1}{16}$

A 1/2

B 1/8

C 1/4

D 1/16

2. How many outcomes are there with tossing a coin and rolling a dice?

Coin ⇒ 2 outcomes
Dice ⇒ 6 outcomes

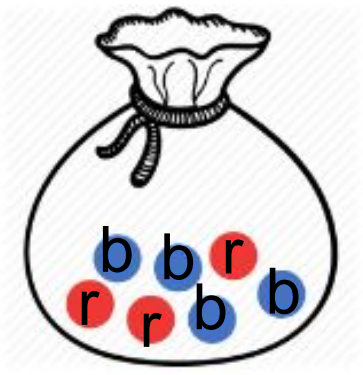
A 2

B 24

C 6

D 12

Total ⇒ 2 × 6 = 12

3. 

What is the probability of picking a blue marble, putting it back in the bag, then picking a red marble?

P(Blue) × P(Red)

$\frac{4}{7} \times \frac{3}{7} = \frac{12}{49}$

A $\frac{3}{7} \times \frac{3}{7}$

B $\frac{4}{7} \times \frac{3}{6}$

C $\frac{4}{7} \times \frac{3}{7}$

D $\frac{4}{7} \times \frac{4}{7}$

4. 

If you spin two times, what is the probability of landing on green both times?

P(Green) × P(Green)

$\frac{1}{6} \times \frac{1}{6}$

$\frac{1}{36}$

Name: _____ Date: _____

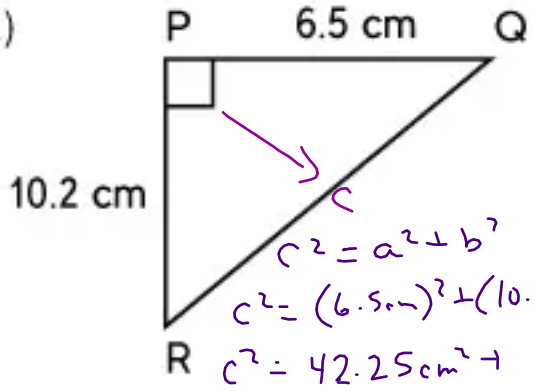
MATH MONKS

Pythagoras' Theorem Worksheet

WS SOLUTION

Find the lengths of the unknown sides in the given right triangles.

1)



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

$c^2 = (6.5cm)^2 + (10.2cm)^2$

$c^2 = 42.25cm^2 + 104.04cm^2$

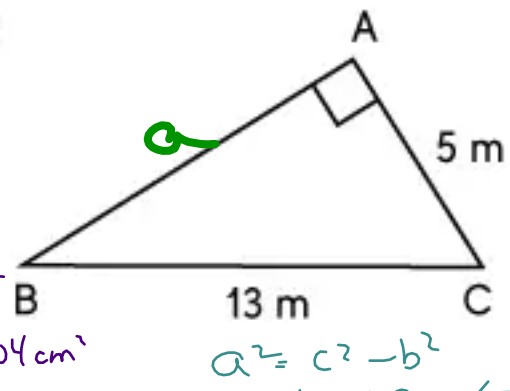
$c^2 = 146.29cm^2$

$\sqrt{c^2} = \sqrt{146.29cm^2}$

$c \approx 12.1cm$

QR = 12.1cm

2)



$a^2 = c^2 - b^2$

$a^2 = (13m)^2 - (5m)^2$

$a^2 = 169m^2 - 25m^2$

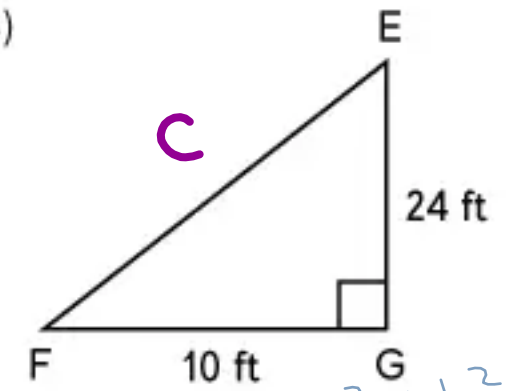
$a^2 = 144m^2$

$\sqrt{a^2} = \sqrt{144m^2}$

$a \Rightarrow 12m$

AB = 12m

3)



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

$c^2 = (10ft)^2 + (24ft)^2$

$c^2 = 100ft^2 + 576ft^2$

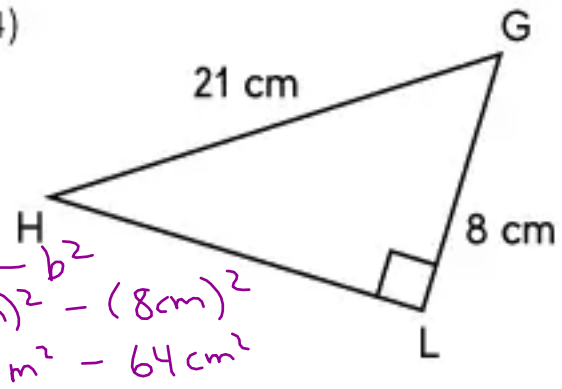
$c^2 = 676ft^2$

$\sqrt{c^2} = \sqrt{676ft^2}$

$c = 26ft$

EF = 26ft

4)



$a^2 = c^2 - b^2$

$a^2 = (21cm)^2 - (8cm)^2$

$a^2 = 441cm^2 - 64cm^2$

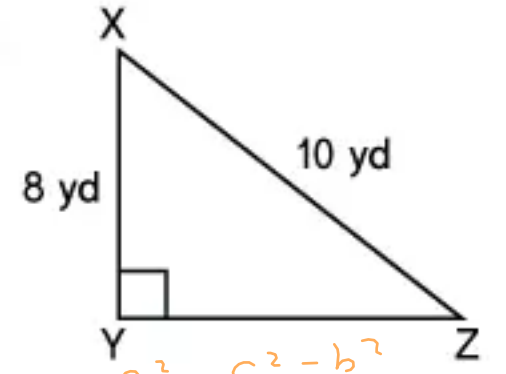
$a^2 = 377cm^2$

$\sqrt{a^2} = \sqrt{377cm^2}$

$a \approx 19.4cm$

HL = 19.4cm

5)



$a^2 = c^2 - b^2$

$a^2 = (10yd)^2 - (8yd)^2$

$a^2 = 100yd^2 - 64yd^2$

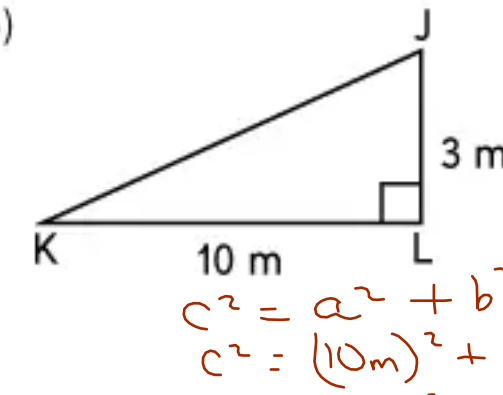
$a^2 = 36yd^2$

$\sqrt{a^2} = \sqrt{36yd^2}$

$a = 6yd$

YZ = 6yd

6)



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

$c^2 = (10m)^2 + (3m)^2$

$c^2 = 100m^2 + 9m^2$

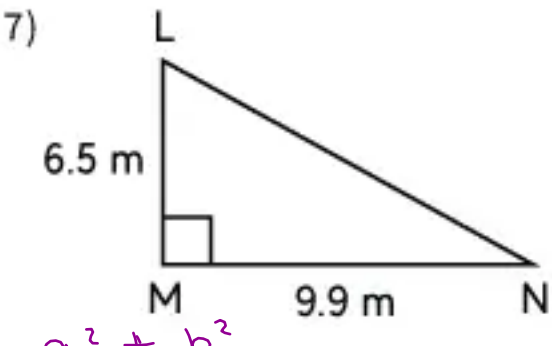
$c^2 = 109m^2$

$\sqrt{c^2} = \sqrt{109m^2}$

$c = 10.4m$

KJ = 10.4m

7)



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

$c^2 = (6.5m)^2 + (9.9m)^2$

$c^2 = 42.25m^2 + 98.01m^2$

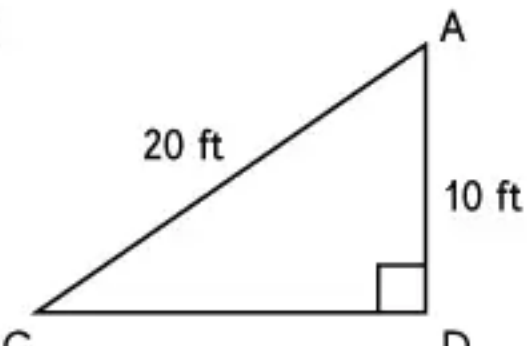
$c^2 = 140.26m^2$

$\sqrt{c^2} = \sqrt{140.26m^2}$

$c \Rightarrow$

LN = 11.8m

8)



$a^2 = c^2 - b^2$

$a^2 = (20ft)^2 - (10ft)^2$

$a^2 = 400ft^2 - 100ft^2$

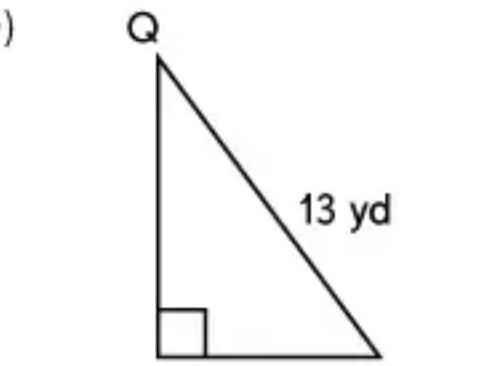
$a^2 = 300ft^2$

$\sqrt{a^2} = \sqrt{300ft^2}$

$a \Rightarrow 17.3ft$

CD = 17.3ft

9)



$a^2 = c^2 - b^2$

$a^2 = (13yd)^2 - (4yd)^2$

$a^2 = 169yd^2 - 16yd^2$

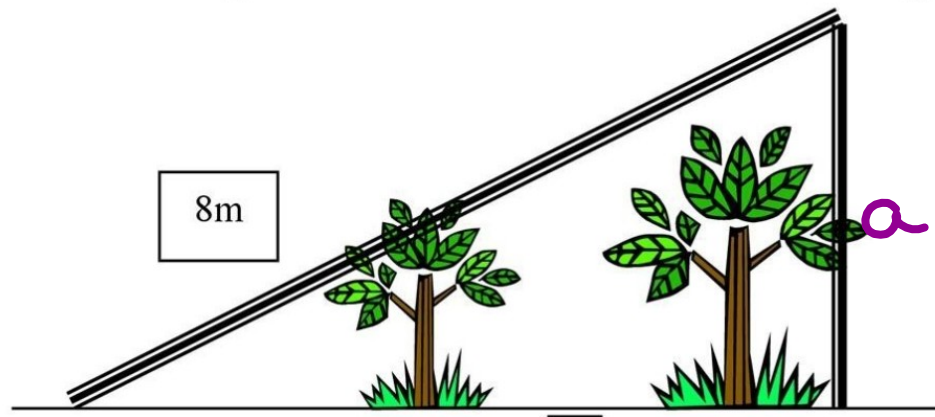
$a^2 = 153yd^2$

$a = \sqrt{153yd^2}$

$a \Rightarrow 12.4yd$

QR = 12.4yd

Q3) A ladder if 8 metres long . It leans against a wall with one end on the ground 6 metre from the wall. The other end just reaches a windowsill. Calculate the height of the windowsill above the ground.



WS SOLUTION

$a^2 = c^2 - b^2$

$a^2 = (8\,m)^2 - (6\,m)^2$

$a^2 = 64m^2 - 36m^2$

$a^2 = 28m^2$

$\sqrt{a^2} = \sqrt{28m^2}$

$a \approx 5.3\,m$

Determine whether each set of numbers is a Pythagorean triple.

1) 6, 8, 10

$6^2 + 8^2$ → 10^2

$36 + 64$ → 100

100 = 100

same

Yes

2) 16, 7, 3

16^2 → $7^2 + 3^2$

256 → $49 + 9$

$256 \neq 58$

Not same

Not A triple

3) 32, 21, 26

32^2 → $21^2 + 26^2$

1024 → $441 + 646$

$1024 \neq 1117$

Not same

Not A triple

4) 20, 25, 15

25^2 → $20^2 + 15^2$

625 → $400 + 225$

$625 = 625$

Same

So yes a triple