

Examples: Solve. Answer each question to the nearest tenth.  
Use the  $\pi$  button (not the approximation 3.14)

2-step equations

get x alone!  
line  
add or subtract step first  
do opposite (to both sides)

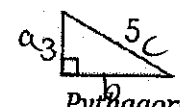
$$\begin{aligned} a) \quad 25 &= 7x + 4 \\ -4 &\quad -4 \\ \hline 21 &= 7x \\ \frac{21}{7} &\quad \frac{7}{7} \\ \hline 3 &= x \end{aligned}$$

Equations with brackets

brackets  
collect x's on each side  
move x's to one side, #'s to other  
solve.

$$\begin{aligned} b) \quad 4(x-3) &= 4x - 2(x+1) \\ 4x - 12 &= 4x - 2x - 2 \\ 4x - 12 &= 2x - 2 \\ -2x + 12 &\quad -2x + 12 \\ \hline 2x &= 10 \\ \frac{2x}{2} &\quad \frac{10}{2} \\ x &= 5 \end{aligned}$$

Pythagoras



hypo!

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

Simplify, then solve

#s! use calc  
now it's like this!

$$\begin{aligned} d) \quad 125 &= \pi(4.5)^2 + \pi(4.5)h \\ 125 &= 63.617 + 14.13h \\ -63.617 &\quad -63.617 \\ \hline 61.383 &= 14.13h \\ \frac{61.383}{14.13} &\quad \frac{14.13}{14.13} \\ \hline h &= 4.2925 \\ h &= 4.3 \end{aligned}$$

Exponents!

we calc!  $4 \div 3 \times \pi$

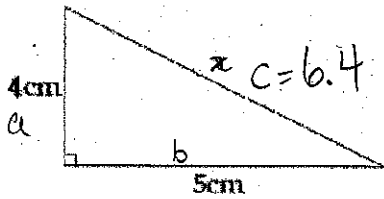
$$\begin{aligned} e) \quad 142.6 &= \frac{4}{3}\pi r^3 \\ 142.6 &= 4.189 r^3 \\ \frac{142.6}{4.189} &\quad \frac{4.189}{4.189} \\ \hline 34.042 &= r^3 \\ \sqrt[3]{34.042} &= \sqrt[3]{r^3} \\ r &= 3.24 \\ r &= 3.2 \end{aligned}$$

Your Turn! Complete the back of this page, and the puzzle handout!

Answer each question to the nearest tenth. Use the  $\pi$  button (not 3.14). Then complete the puzzles.

1. Solve for x.

a)



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

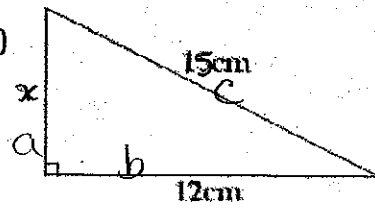
$$4^2 + 5^2 = c^2$$

$$16 + 25 = c^2$$

$$\sqrt{\quad} \quad 41 = c^2$$

$$c = \sqrt{41} \approx 6.403 \text{ cm}$$

b)



$$x^2 + 12^2 = 15^2$$

$$x^2 + 144 = 225$$

$$\begin{array}{r} x^2 + 144 = 225 \\ -144 \quad -144 \\ \hline x^2 = 81 \end{array}$$

$$\sqrt{\quad} \quad x^2 = 81$$

$$x = \sqrt{81}$$

$$x = 9 \text{ cm}$$

2. Solve for h.

a)  $3927 = \frac{1}{3}\pi(46)^2 h$

$$1 \div 3 \times \pi \times 46^2$$

$$\frac{3927}{22.16} = \frac{22.16 h}{22.16}$$

$$17.7 = h$$

b)  $9541 = \pi(34.1)^2 + \pi(34.1)h$

$$9541 = 3653.075 + 107.128h$$

$$\begin{array}{r} 9541 \\ -3653.075 \\ \hline 5887.925 = 107.128h \end{array}$$

$$\frac{5887.925}{107.128} = \frac{107.128 h}{107.128}$$

$$54.96 = h$$

$$h = 55.0$$

3. Solve.

a)  $34.6 = \frac{1}{3}b^2(14)$

$$34.6 = \frac{1}{3}b^2(14)$$

$$\frac{34.6}{4.667} = \frac{4.667 b^2}{4.667}$$

$$\sqrt{7.414} = \sqrt{b^2}$$

$$b = 2.7229$$

$$b = 2.7$$

b)  $108 = \frac{4}{3}\pi r^3$

$$108 = \frac{4}{3}\pi r^3$$

$$\frac{108}{4.1888} = \frac{4.1888 r^3}{4.1888}$$

$$25.78 = r^3$$

$$r = \sqrt[3]{25.78}$$

$$r = 2.954$$

# FIND A MATCH

Solve any equation in the top block and find the solution in the bottom block. Transfer the word from the top box to the corresponding bottom box. Keep working and you will get another corny joke.

① $4x - 6 = 22$ THEY	⑤ $-4x + 6 = -42$ BECAUSE	⑨ $1 - 9n = -80$ AN	⑬ $-5n + 9 = -46$ COSTS
② $9x + 2 = 47$ IT	⑥ $-11x + 4 = 26$ A	⑩ $-5 - 15n = 10$ FARMERS	⑭ $-27 + 4n = 33$ EAR
③ $2x + 1 = -15$ SOMETHING	⑦ $8x - 18 = 6$ ARE	⑪ $12n + 2 = -46$ CORN	⑮ $-7n - 20 = -48$ PIRATE
④ $-6x - 11 = 49$ SOME	⑧ $7 + 3x = 25$ CALL	⑫ $-4 - 2n = 60$ SELLING	⑯ $19 - 3n = 82$ BUCK
$x = -10$ SOME	$n = -1$ FARMERS	$x = 3$ ARE	$n = -32$ SELLING
$x = -8$ SOMETHING	$x = 7$ THEY	$x = 6$ CALL	$n = 4$ PIRATE
$n = -4$ CORN	$x = 12$ BECAUSE	$x = 5$ IT	$n = 11$ COSTS
$x = -2$ A	$n = -21$ BUCK	$n = 9$ AN	$n = 15$ EAR

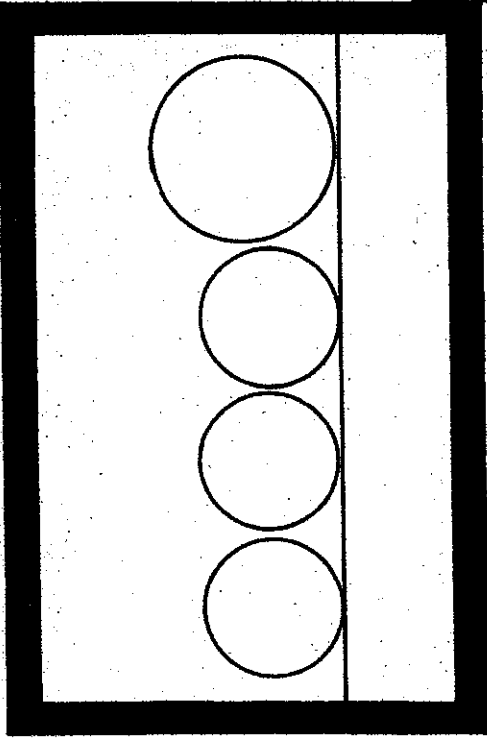
# What Is The Title Of This Picture?

**CODED TITLE:**

Q U A R T E R T H A T  
18 -6 6 2 -5 -7 2 -5 -3 6 -5

J O I N E D T H E  
7 -1 4 -4 -7 8 -5 -3 -7

M A R C H O F D I M E S  
-13 6 2 1 -3 -1 3 8 4 -13 -7 -2



**TO DECODE THE TITLE OF THIS PICTURE:**

Solve any equation below and find the solution in the code above. Each time the solution appears, write the letter of that exercise above it. Keep working and you will discover the title.

- ①  $5(x + 4) = 40$      4
- ②  $2(3y - 7) = 56$      -7
- ③  $6(1 - 4w) = -18$      1
- ④  $4(2x + 5) - 8 = 36$      3
- ⑤  $2(5 - 3v) + 9v = 28$      6
- ⑥  $7 - 3(5t - 10) = 67$      -2
- ⑦  $-9(6 + u) - 2u = -10$      -4
- ⑧  $13x + 7(-3x - 1) = -63$      7
- ⑨  $15 - (4m - 5) = 32$      -3
- ⑩  $-2(-7k + 4) + 9 = -13$      -1
- ⑪  $-5y - 5(-6 - 2y) = 0$      -6
- ⑫  $3(1 + 4n) - 2(5n - 3) = 25$      8
- ⑬  $-6(x - 2) + 4(3 - 6x) = -36$      2
- ⑭  $5(4 + 2x) - (8x - 12) = 68$      18
- ⑮  $-3(-4 - 6y) + 7(-y + 5) = -8$      -5
- ⑯  $8(2w - 6) + 4(-1 - 5w) = 0$      -11

6 5