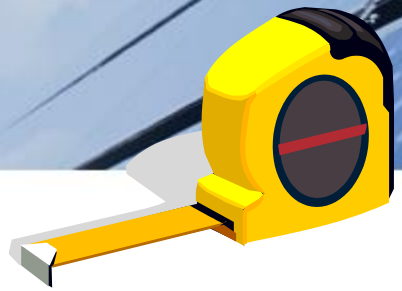
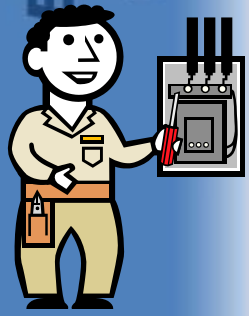
SIERRA COLLEGE

Measuring

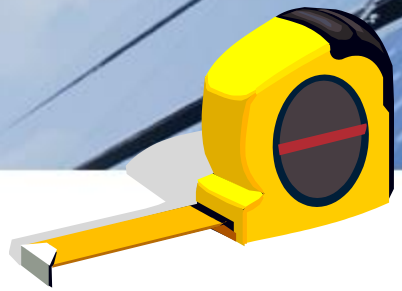
Reading a Rule



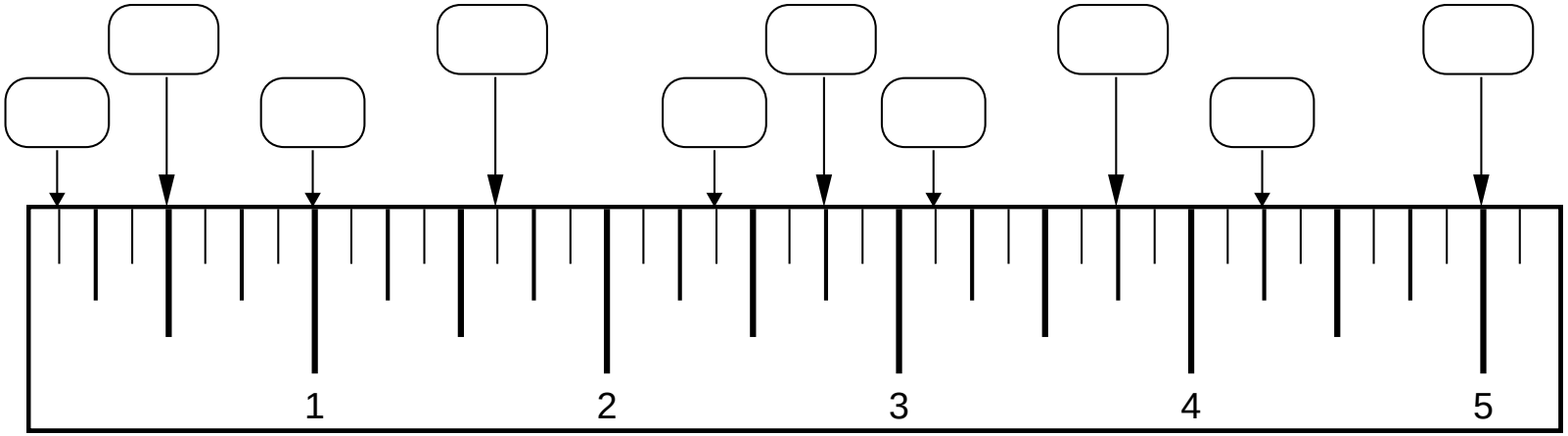
What's the big deal?

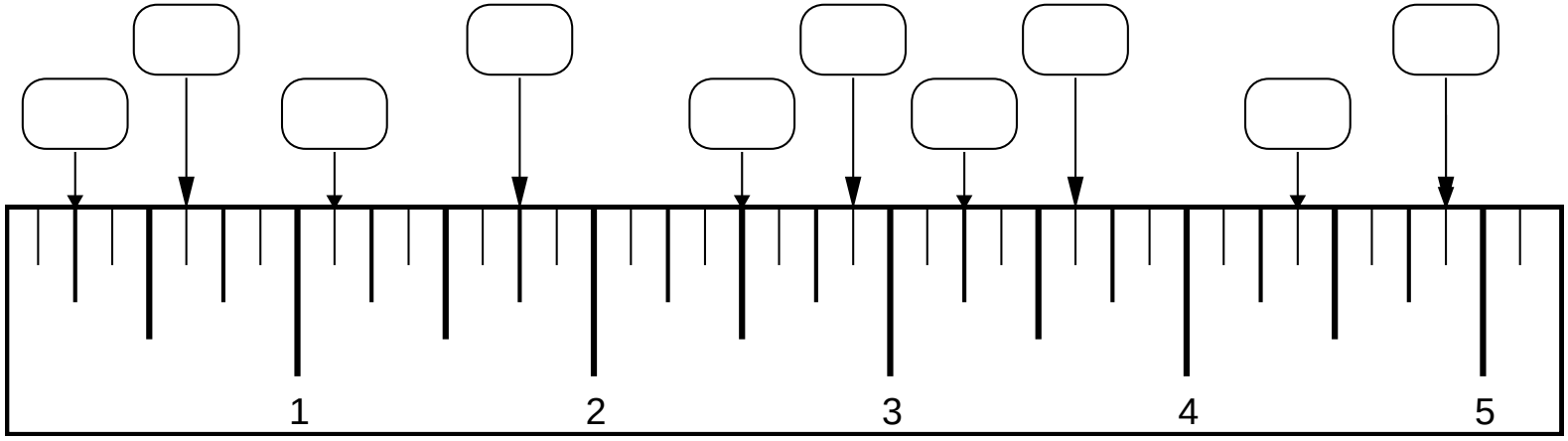


Reading a Rule

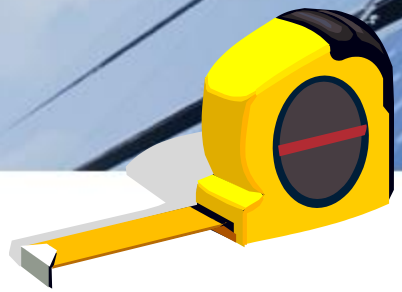


Pretest

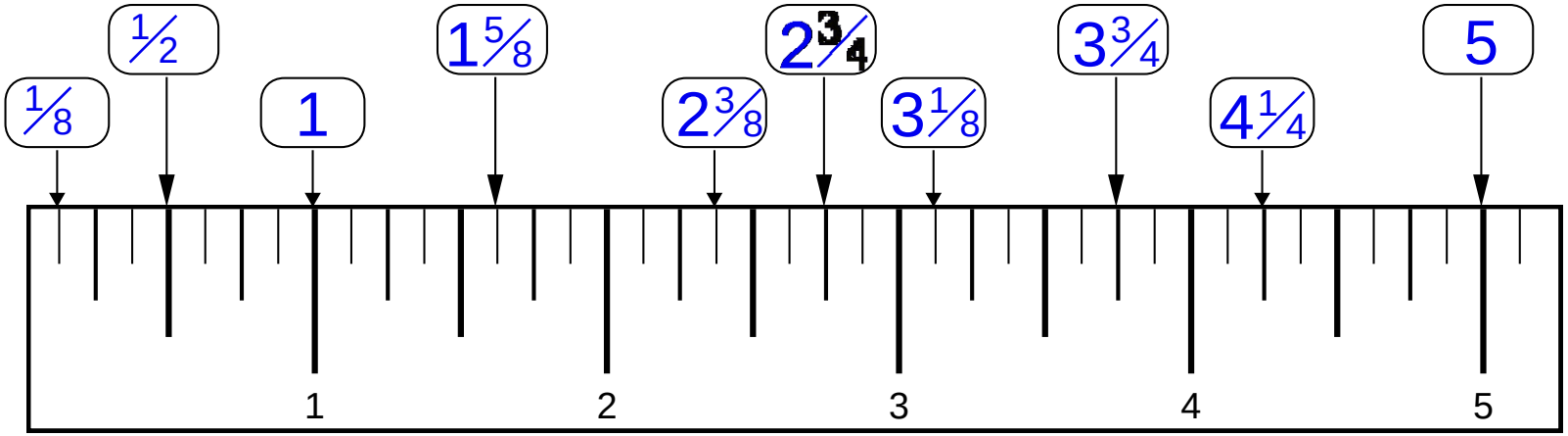


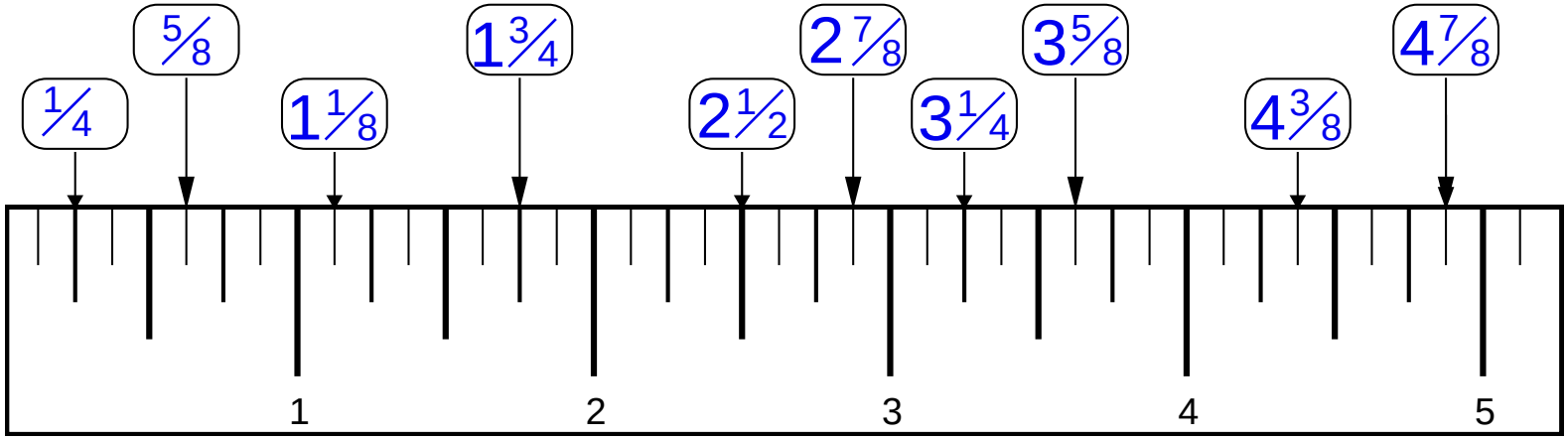


Reading a Rule



Answers





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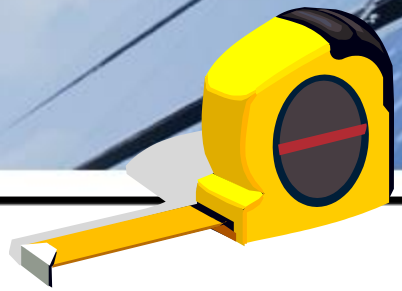
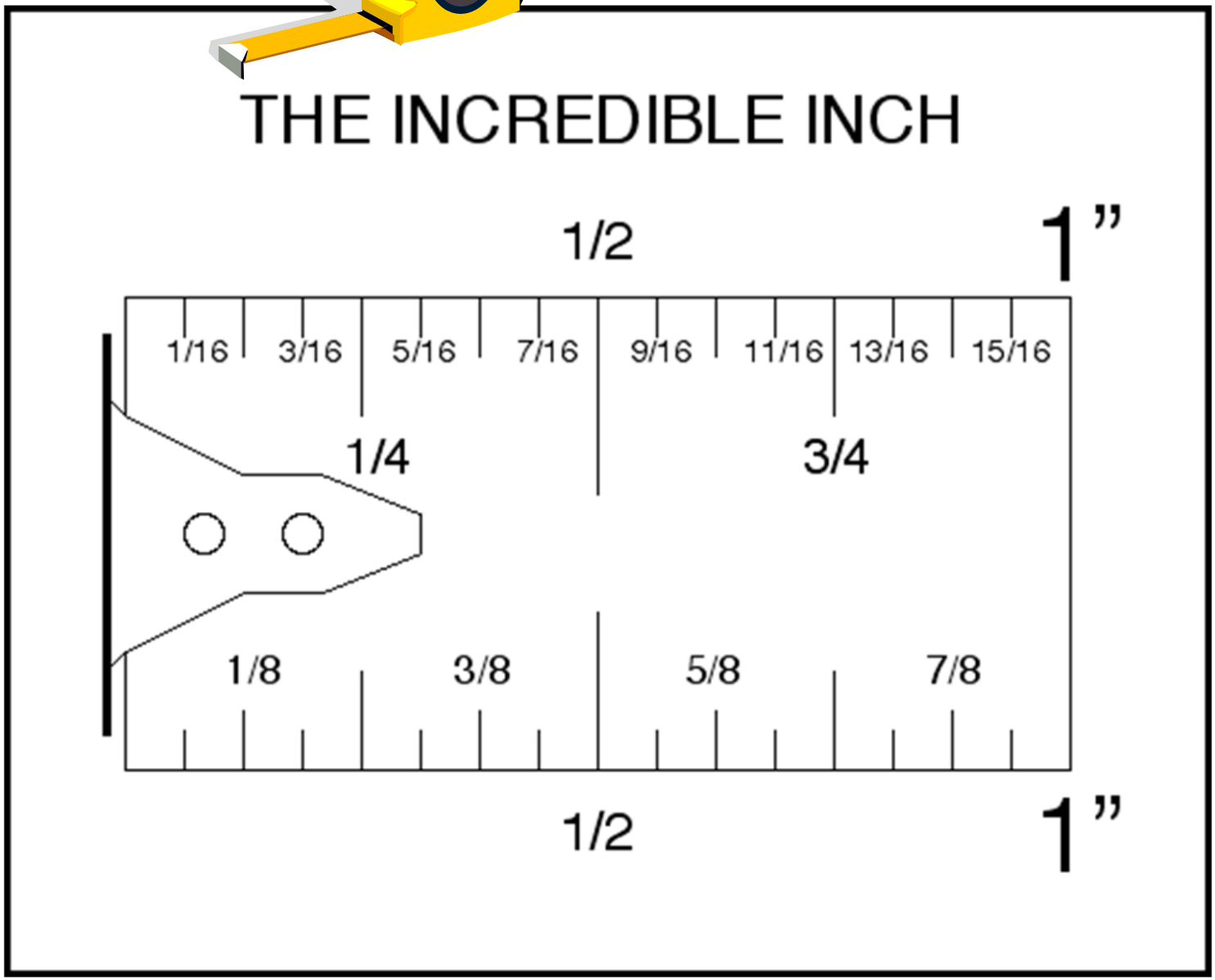
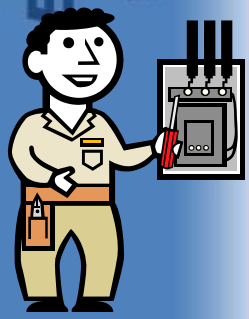






Reading a Rule

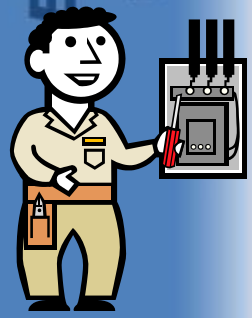
Fractions of an inch / tape measure basics:

The standard construction tape measure reads to the sixteenth.
In other words, 16ths are the smallest increment on a construction tape.

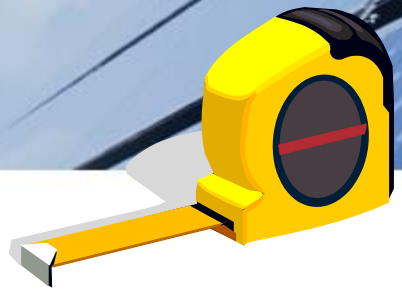
There are 16 sixteenths in one inch. (16/16)
There are 8 eighths in an inch. (8/8)
There are 4 quarters in an inch. (4/4)
There are 2 halfs in one inch. (2/2)

Short cuts when dividing fractions of an inch:

Half of 7/8 = 7/16
Half of 3/4 = 3/8
Half of 5/8 = 5/16
Half of 3/8 = 3/16



Reading a Rule

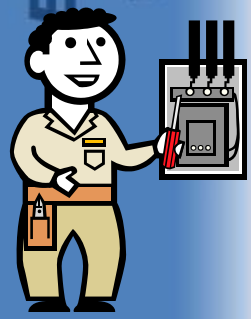


Fraction to Decimal

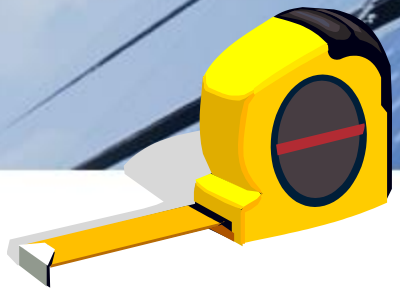
½” = .5
¾ = .75
¼ = .25
3/8 = .375
5/8 = .625
7/8 = .875

On the calculator:
Divide the Numerator (top number of fraction) by Denominator (bottom number of fraction)

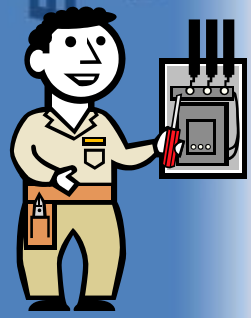
Example: 1 / 2 = .5



Reading a Rule

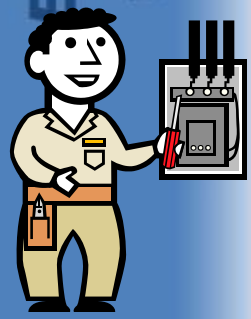


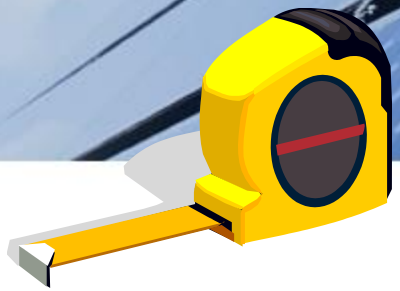
Typical Measuring Tapes



Reading a Rule

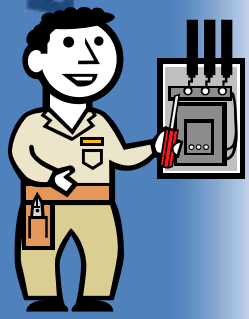
50 & 100 ft. Flexible Tapes For Longer Layouts





Reading a Rule

Measuring Is Usually A One Person Job



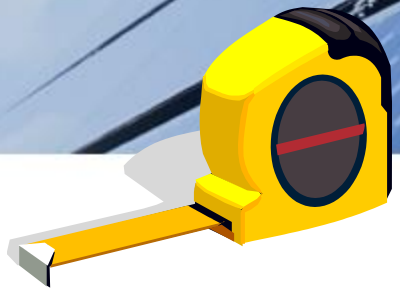
Reading a Rule

One man…

Reading a Rule

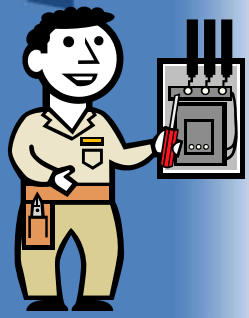
This should have been.

Reading a Rule

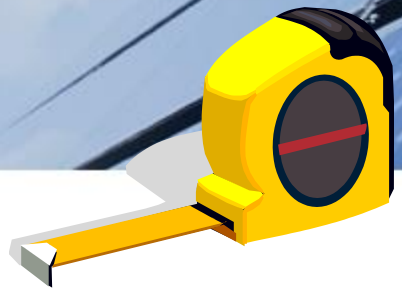


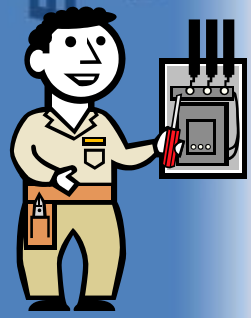
Long Runs, 2 Man Jobs…

The other guy (out of frame) is holding the dumb end of the tape

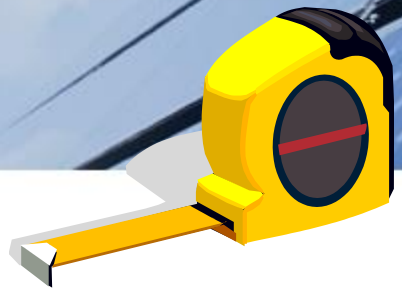


Reading a Rule





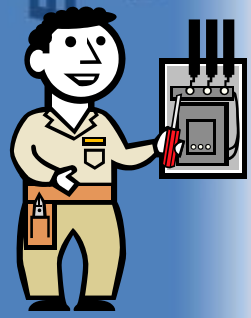
Inside Measurements:
End of tape cleat pushes against frame



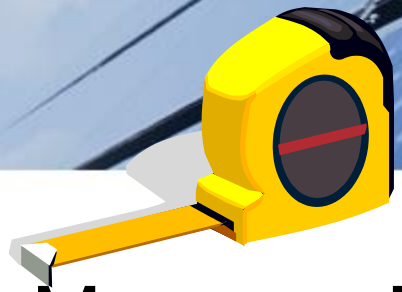
Reading a Rule

Outside Measurements

End of tape cleat hooks on outside
(The cleat adjust for inside or outside measurements)

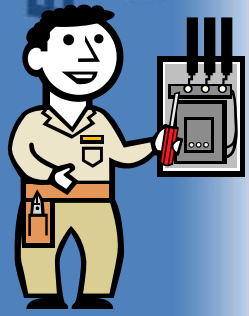


Reading a Rule



Measure From Bottom Up

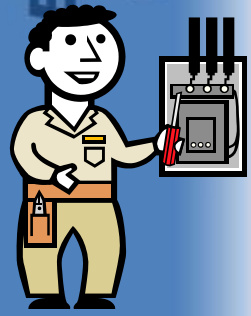
One man operation



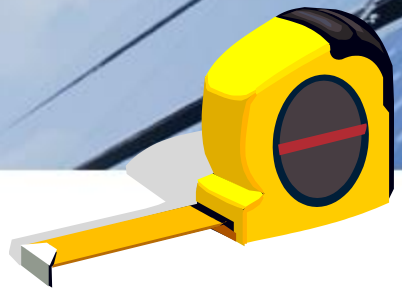
Reading a Rule

16” On Center Spacing

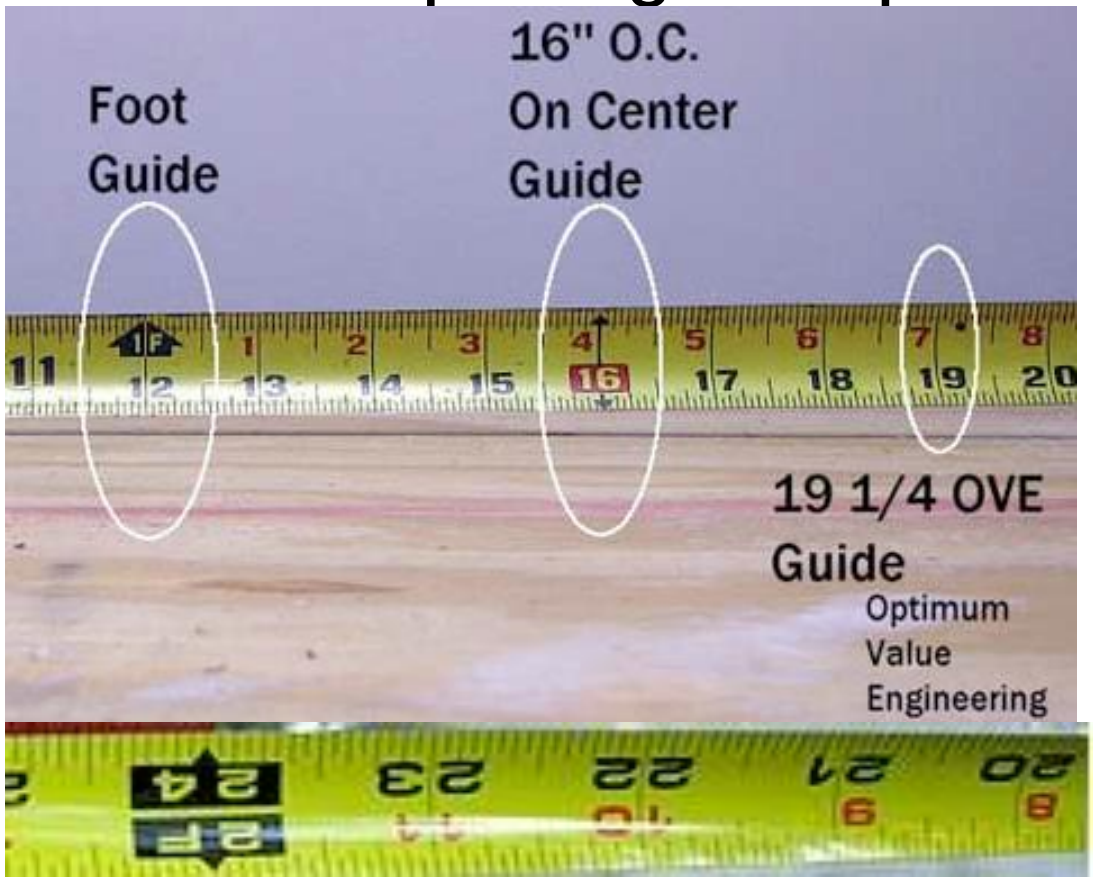
- Typical Wall Framing Layout



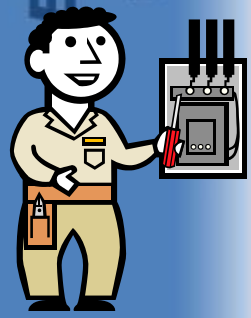
Reading a Rule



Center Spacing is Important



Even Up-side-down!



Reading a Rule

Measuring In Inches & Feet

- 12 inches = 1 foot
- 3 feet = 1 yard

Finding Square Area of Geometric Shapes

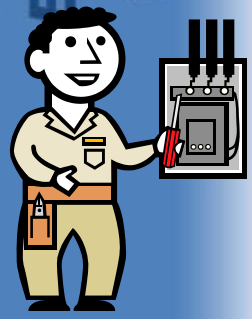
Square foot: An area 1ft x 1ft = 1 square ft.
Square yard: An area 3ft x 3ft = 9 square ft or 1 square yard

When calculating square feet use the formulas in #1 below.
When calculating square yards, divide the total square footage by 9

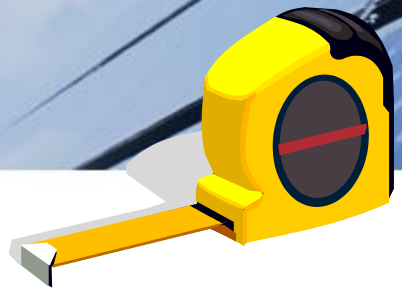
Example: A is room 27 ft. x 10 ft. = 270 sq. ft.

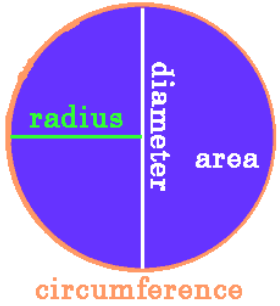
Carpet is sold by the square yard. How many sq. yds. will be required?

$$\frac{270 \text{ sq ft}}{9} = 30 \text{ sq. yds of carpet}$$



Reading a Rule





1. To calculate square area:

   - For rectangles and squares: Length x Width = Sq. Area

     Example: A rectangle 4 ft long and 2 ft wide = 8 square feet
     4 x 2 = 8 sq. ft.

   - For triangles: $\frac{\text{Base x Height}}{2}$ = sq. area

     Example: A triangle with a base of 10 ft. and a height of 8 ft. = 40 sq. ft.

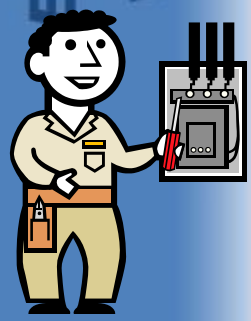
     $10 \text{ ft} \times 8 \text{ ft} = \frac{80 \text{ sf}}{2} = 40 \text{ sq. ft.}$

   - For circles Pi x Radius Squared = square area
     (Pi = 3.1415)

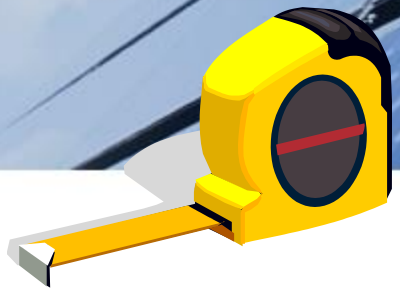
     Example: A circle has a diameter of 2 ft. & a radius of 1 ft = 3.1415 sq. ft.

     $\text{Diameter} = \frac{2}{2} = \text{a radius of 1ft}$

     1x1 = 1ft x Pi = 3.1415 sq. ft.



Reading a Rule

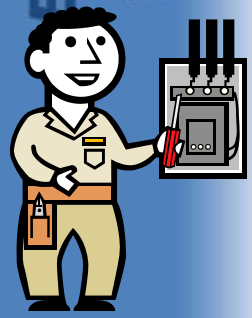


Finding Cubic Area of Geometric Shapes

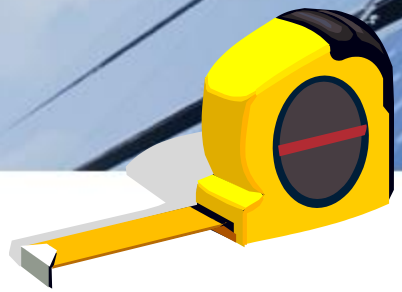
Calculate the square areas for the shapes above and then multiply by thickness or depth. If you are measuring in inches the answer will be in cubic inches. If you are measuring in feet, the answer will be in cubic feet, etc.

To find cubic yards, divide the cubic footage total by 27.

One yard = 3 feet
One square yard is 3ft x 3ft = 9 square feet = one square yard
One cubic yard is 3 x 3 x 3 = 27 cubic feet = one cubic yard



Reading a Rule



Examples:

1. A foundation slab 27ft x 20ft x 1ft thick is to be poured with concrete.
   How many cubic yards will be required?

   $27ft \times 20ft \times 1\ ft = \frac{540\ cubic\ ft.}{27} = 20$ cubic yards of concrete

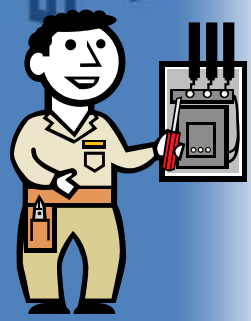
2. A column with a diameter of 2 ft. and a height of 10 ft. is to be poured with concrete.
   How many cubic yards will be required?

   Pi x radius squared = square area

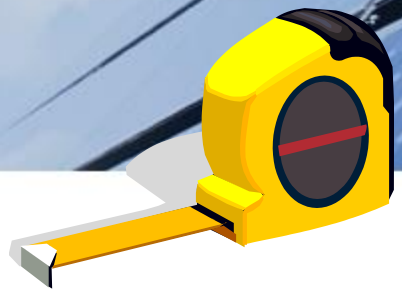
   Square area x height = cubic area

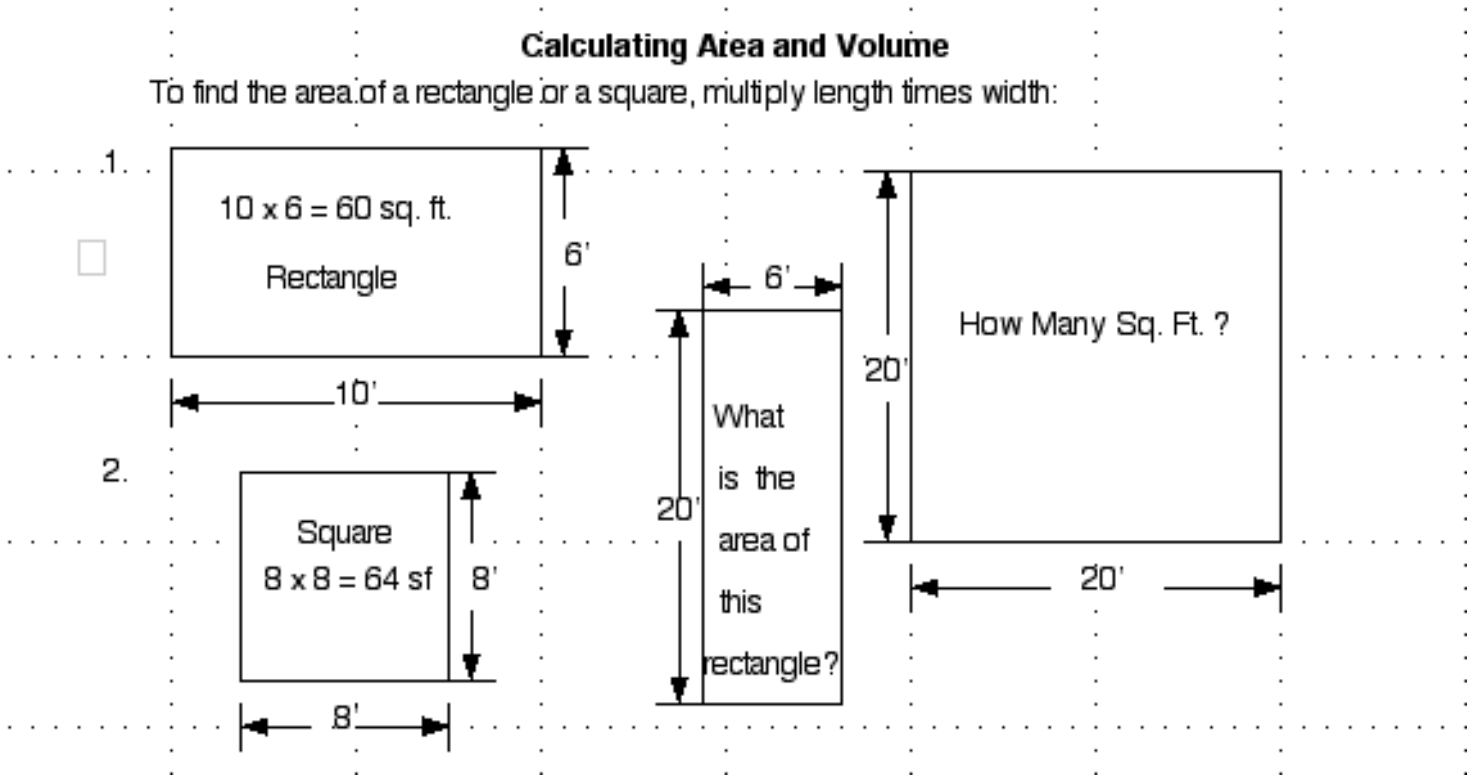
   Radius Square: 1x1 = 1ft

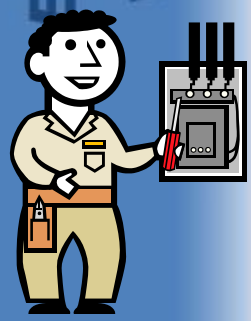
   $3.1415 \times 1ft \times 10ft = \frac{31.415}{27}$ cubic ft = 1.1635 cubic yards of concrete



Reading a Rule







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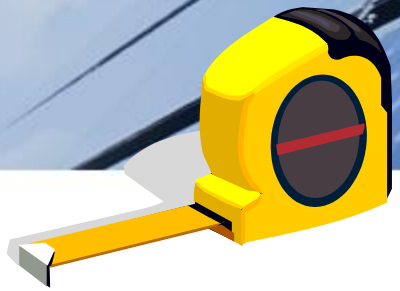
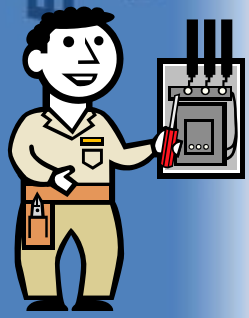


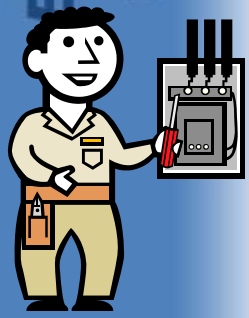
4ft x 8ft plywood

What is the area?

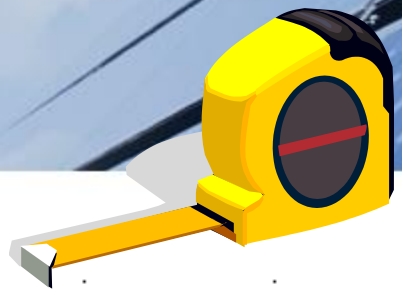


Reading a Rule

- Typical module is ~ 3ft x 5ft
- What is the area?

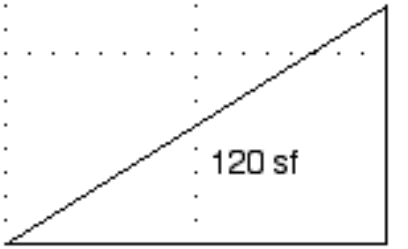


Reading a Rule

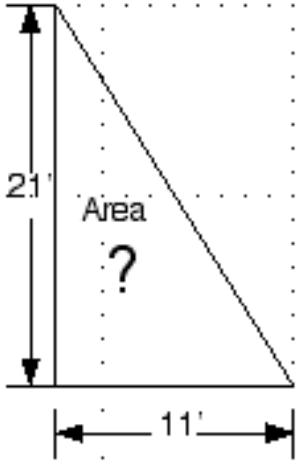


3. To find the area of a triangle, multiply the base times the height and divide by 2.

$14 \times 12 = \frac{168}{2} = 84$ sf



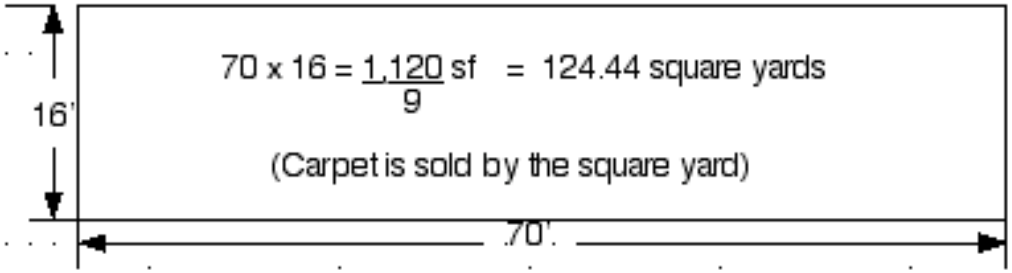
$20 \times 14 = \frac{240}{2} = 120$ sf



4. To find square yards, calculate square area in feet and then divide by nine.

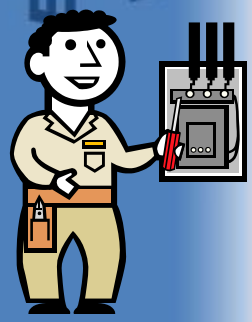
3 ft = 1 yard 3'x3' = 9 square feet or 1 square yard

The magic number for calculating square yards is **" 9"**

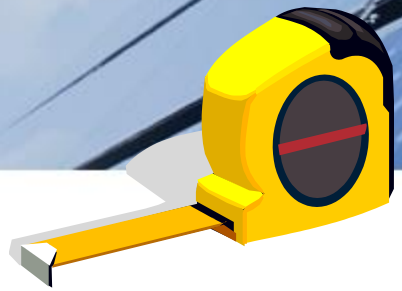


$70 \times 16 = \frac{1,120}{9}$ sf = 124.44 square yards

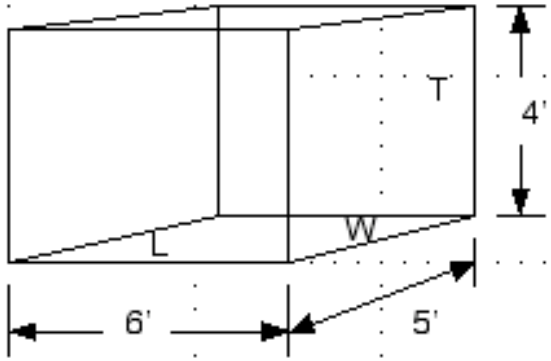
(Carpet is sold by the square yard)



Reading a Rule



5. To find cubic area in feet, multiply length x width x thickness

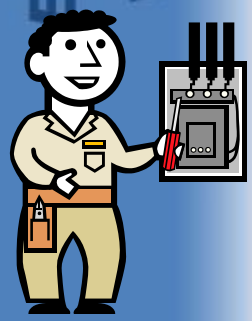


6 x 5 x 4 = 120 cubic feet N.T.S.

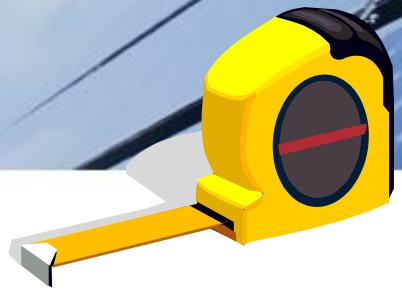
6. To find cubic yards, find cubic area of a shape and then divide by 27.

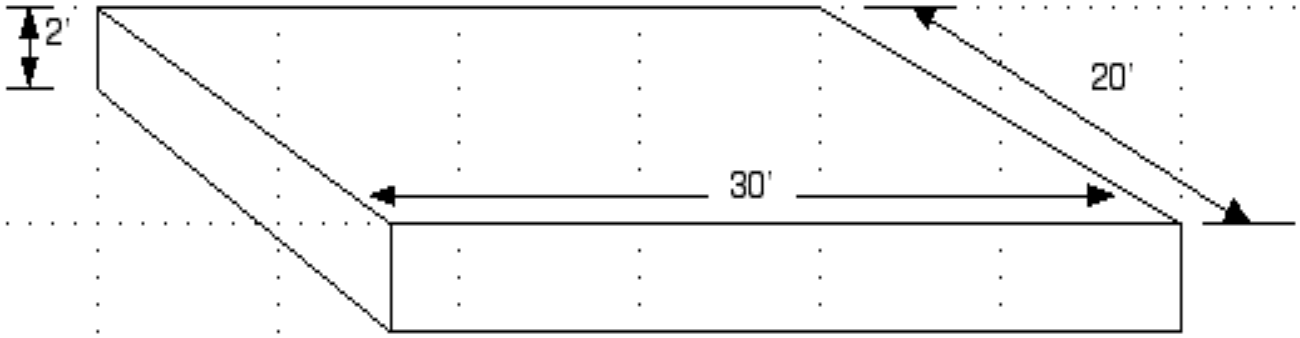
one yard = 3 feet one square yard is 3 x 3 = 9 square feet

one cubic yard is 3 x 3 x 3 = 27 cubic feet = one cubic yard



Reading a Rule





The concrete slab above is 30 ft long, 20 ft. wide and 2 ft. thick.

30 x 20 x 2 = 1200 cubic feet $\frac{1200 \text{ cf}}{27}$ = 44.44 cubic yards

The magic number for cubic yards is 27