

Dimensional Analysis

Converting from one unit to another unit

Table Groups

- ▶ You will see a question on the projector
- ▶ As a group come up with your best answer
- ▶ Write it LARGELY on your whiteboard
- ▶ When told to do so you will hold your whiteboard up for me to see.
- ▶ If correct you will earn a point
- ▶ Winners get a prize! 😊

Model 1

All measurements consist of a numerical value **AND** a unit.



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STARTING VALUE
KNOWN VALUE
AMOUNT NEEDED

Q1:
In the drawing of the buyer's thoughts, what does "2 pounds" represent?

Model 1

All measurements consist of a numerical value **AND** a unit.



\$1.99
1 pound

Q2:
In the
buyer's
thoughts,
which part
is a
**CONVERSION
FACTOR**

Model 1

All measurements consist of a numerical value **AND** a unit.



Q3:
What unit
does the
final answer
have?

Model 1

All measurements consist of a numerical value **AND** a unit.



The “pounds” **CANCELS**
out!

Q4:

Why does
“pounds”
disappear in
the final
answer?
Explain using
a MATH
term!

Model 1

All measurements consist of a numerical value **AND** a unit.



$$\begin{array}{r|l} \cancel{2 \text{ lbs}} & \$6 \\ \hline & 5 \cancel{\text{ lbs}} \end{array} = \$2.40$$

Q5:

Another market offered 5 pounds of apples for \$6. SHOW using DA how the buyer would do this problem. She still needs 2 pounds!

Model 1

All measurements consist of a numerical value **AND** a unit.



$$\boxed{\$3.98 - \$2.40 = \$1.58}$$

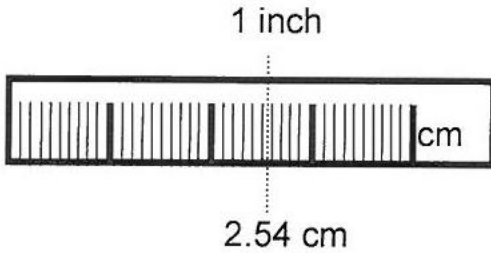
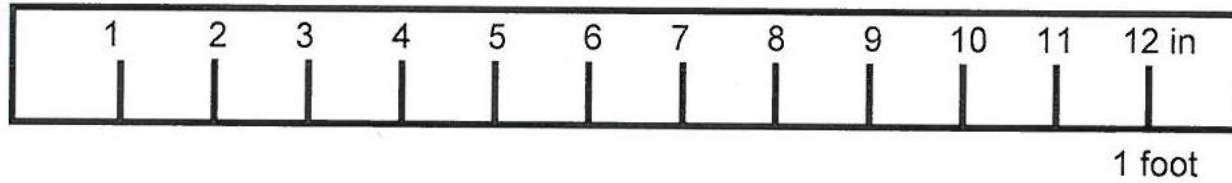
Q6:

How much money will the buyer save by switching to the other market?

**And the winner of
Round 1 is...**



Model 2



$$1 \text{ in} = \text{---} \text{ cm}$$

$$\text{---} \text{ in} = 1 \text{ foot}$$

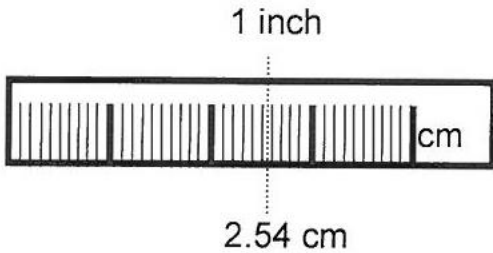
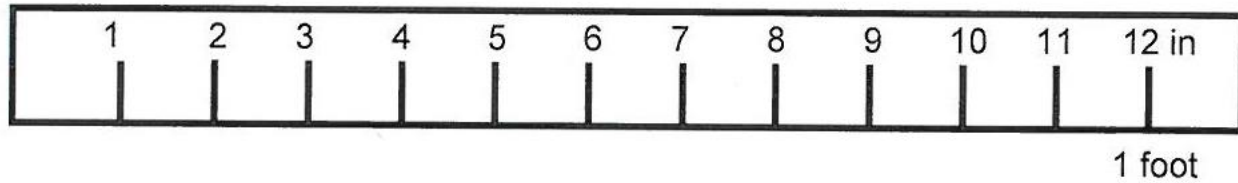
$$1 \text{ in} = 2.54 \text{ cm}$$

$$12 \text{ in} = 1 \text{ foot}$$

Q1:

Based on Model 2, complete the following equality statements

Model 2



$$1 \text{ in} = \text{---} \text{ cm}$$

$$\text{---} \text{ in} = 1 \text{ foot}$$

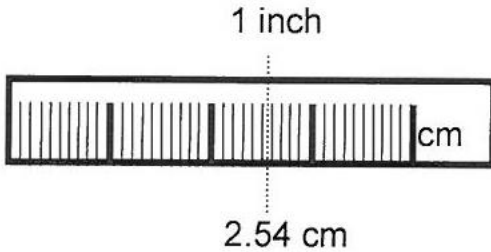
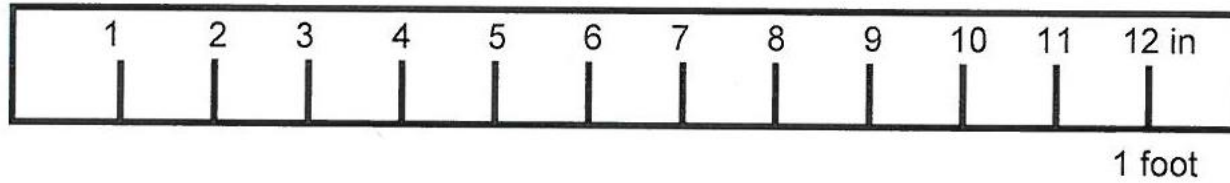
$$\frac{1 \text{ in}}{2.54 \text{ cm}}$$

$$\frac{12 \text{ in}}{1 \text{ foot}}$$

Q2:

Write each of the equalities as a fraction

Model 2



$$1 \text{ in} = \text{---} \text{ cm}$$

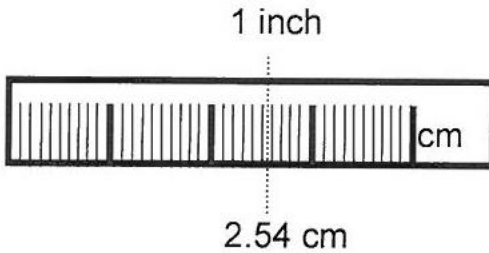
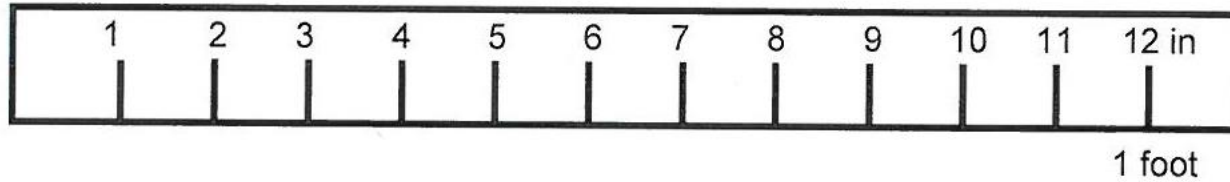
$$\text{---} \text{ in} = 1 \text{ foot}$$

$$\begin{array}{r} 7.5 \text{ ft} \\ \hline 12 \text{ in} \\ \hline 1 \text{ ft} \end{array} = 90 \text{ in}$$

Q3:

Houston Rocket's basketball player Yao Ming is 7.5 feet tall. Show using DA how tall he is in INCHES

Model 2



$$1 \text{ in} = \text{---} \text{ cm}$$

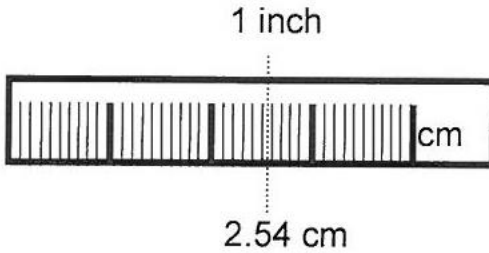
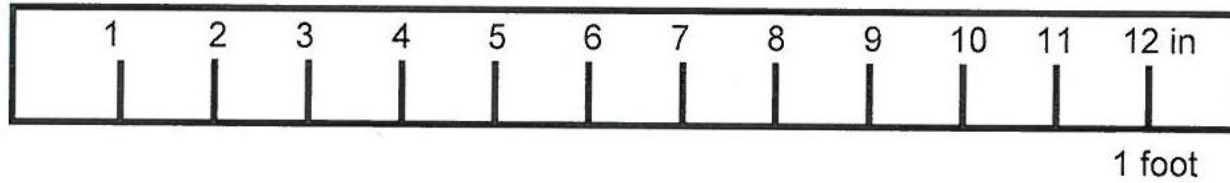
$$\text{---} \text{ in} = 1 \text{ foot}$$

Q4:

Now convert his height from inches to centimeters using DA

$$\begin{array}{r} 90 \text{ in} \\ \hline 2.54 \text{ cm} \\ \hline 1 \text{ in} \end{array} = 228.6 \text{ cm}$$

Model 2



$$1 \text{ in} = \text{---} \text{ cm}$$

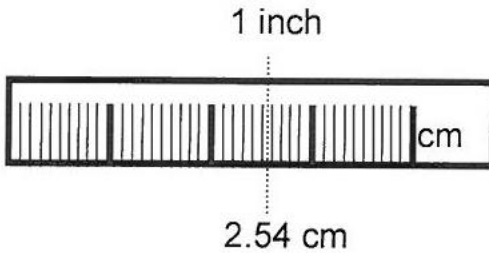
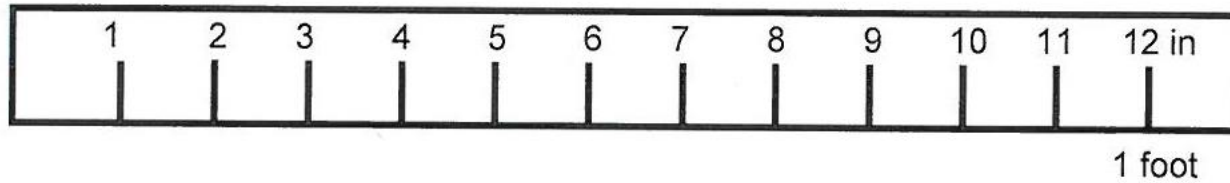
$$\text{---} \text{ in} = 1 \text{ foot}$$

Q5:

Using one long multi step DA problem convert his height from feet to cm!

$$\begin{array}{r} 7.5 \text{ ft} \quad | \quad 12 \text{ in} \quad | \quad 2.54 \text{ cm} \quad = \quad 228.6 \text{ cm} \\ \hline \quad \quad | \quad 1 \text{ ft} \quad | \quad 1 \text{ in} \end{array}$$

Model 2



$$1 \text{ in} = \text{---} \text{ cm}$$

$$\text{---} \text{ in} = 1 \text{ foot}$$

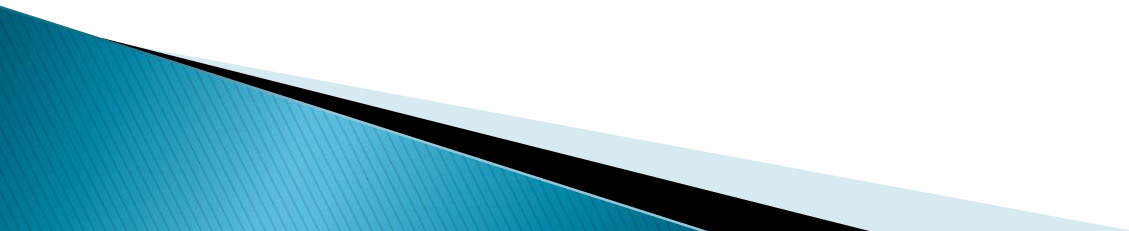
Q6:

Does the order of the conversion factors matter?

No!

Multiplying and dividing can be in any order!

**And the winner of
Round 2 is...**



The Jabberwocky!

