Show Your Work

Show your work!

Label

use units > cancel units

Neat, organized

Show formulae

Plug in to formulae

Show side calculations

Box answer

State answer in words

Draw diagrams

Check answer
- realistic?
- answered question?
- plug back in to test

General Observations

Show work! It ensures you are doing the right steps. Makes it easy to review and check your answer, makes it easier for teacher to find the answer. Just a good habit to get into when things get get more challenging with more steps. Plus you can get part marks even if wrong answer!
Lable parts of your calculation for clarity to you and to teacher!
State answer in words often, where appropriate.

Find the mean and median of children aged {1,2,3,4,5} years

Lazy

3

3

EXTREMELY Nice

a) $\overline{X} \equiv mean = \frac{\Sigma x}{n} = \frac{15}{5} = \boxed{3 \, years}$

The mean (or average) age of the children is 3 years

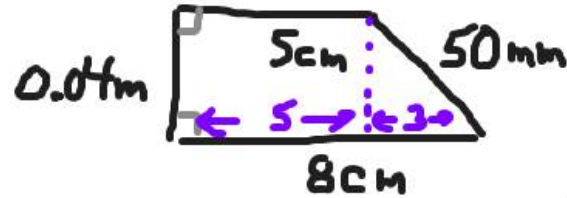b) $\widetilde{X} \equiv median$. Position $= \frac{n+1}{2} = \frac{5+1}{2} = 3$

$1, 2, \underset{\widetilde{X}}{3}, 4, 5$ $\boxed{\text{The median is } 3 \text{ years of age.}}$

Things do get more difficult you know!
- So do as I always do:
- Show the formula, step
- Plug in the numbers and units
- juggle the numbers (algebra)
- state answer clearly
- Make sure you answered the question!

61.6

$5 \cdot 0.04 = 0.20$

$50 + 3 + 0.4 + 8 = 61.4$

Where is the answer?
What formula did you use?
What units? WITH!

What is the area of this figure?

5cm   50mm
0.04m
5 → ← 3 →
8cm

Total Area = Rectangle Area + △ area

Rectangle: $A = b \cdot h = 5cm \cdot 0.04m$
$= 5cm \cdot 4cm = 20cm^2$

Triangle: $A = \frac{1}{2}bh = \frac{1}{2} \cdot 3cm \cdot 50mm$

$0.04m$
4

$= \frac{1}{2} \cdot 3cm \cdot 4cm$
6
$= 7.5cm^2$ $6cm^2$

TOTAL Area $= 20cm^2 + 7.5cm^2 = 27.5cm^2$
6

Wait! Boo Boo.

$26cm^2$

Get used to showing your steps even if trivial. You may need to teach your niece some day. It organizes your thoughts. Others (ie: customers, clients) may want to see how you got your calculation!

The school asks you how much it will cost to replace the carpet in the class room, they are paying you as a trades person for a good estimate.

111×44

4884

30×40 5100

$1200 \rightarrow 365 \rightarrow 111$

$10 \times 22 = 220$

Useless Estimate for the customer

Who are you hiring?

Area to carpet
$$30 ft \cdot 40 ft = 1200 ft^2$$
square feet

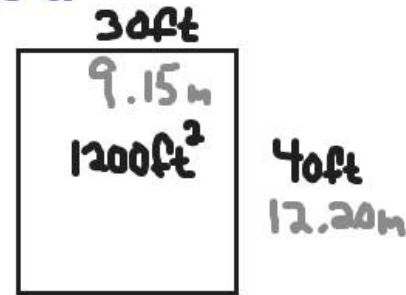Convert area to metric, m^2
$$1200 ft^2 \left(\frac{1 \, m}{3.28 ft}\right)^2 \stackrel{.}{=} 111 \, m^2 \text{ square metres}$$

COST: $111 \, m^2 \cdot \$44/m^2 = \$4884$ for carpet

LABOUR: $10 \, hours \cdot \$22/hour = \$220$

TOTAL COST: $\$5,104 + $ Taxes

30ft

9.15m

$1200 ft^2$ 40ft

12.20m

Show units! When you get an answer of 12,345 is it pickles? Camels per mile? Pesos per day? Show units. Showing units throughout the entire calculation is even better, ensures you are using the correct formula.

As per previous example

$30 \, km/hour$ is how many metres/second?

Bad

$30 \cdot 1000 \cdot 60$

$1\,800\,000$

?

Not even a realistic answer!

I seriously get answers like this!

Perfect

@lear, step-by-step

$30 \, km/hr \cdot \dfrac{1 \, hr}{60 \, min} = 0.5 \, km/min$

$0.5 \, km/min \cdot \dfrac{1000 \, m}{1 \, km} = 500 \, m/min$

$500 \, m/min \cdot \dfrac{1 \, min}{60 \, sec} \approx 8.33 \, m/sec$

If you were doing science class or nursing or advance business you would need to be very concise in rather complicated formulas

This is what you would be doing in Grade 11 Applied or Calculus class

Travis makes decoy ducks. His profit is given by the equation Profit = $-p^2$ +4p +2 How much should he charge for his decoys to make maximum profit?

$$\text{Profit} = -p^2 + 4p + 2$$

$$\text{Vertex} = \left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$$

$$\text{Vertex}_x = \frac{-4}{-2\cdot1} = \$2 \text{ price}$$

$$\text{Vertex}_y = f(2) = -2^2 + 4\cdot2 + 2$$
$$= -4 + 8 + 2$$
$$= \$6 \text{ max profit}$$

when does profit = zero?

$$f(p) = 0 \text{ then}$$
$$P = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-4 \pm \sqrt{4^2 - 4(-1)2}}{2(-1)}$$

$$= \frac{-4 \pm \sqrt{24}}{-2} = 2 \pm 4.9$$
$$\text{etc}$$

Check your answer! -> Realistic?
Plug back in

Solve $3.4x + 1.3 = 14.5$

Bad

$13.2 \div 3.4$

0.2575

Tried my best!

Good

$3.4x + 1.3 - 1.3 = 14.5 - 1.3$

$\dfrac{3.4 \cdot x}{3.4} = \dfrac{13.2}{3.4}$

$x = 13.2 \div 3.4$

$x = 3.88235\ldots$

$\boxed{x \approx 3.88}$

[Rounded as instructed]

Check: $3.4 \cdot 3.88 + 1.3 = 14.492$ ✓

pretty good!