**. Limits of Accuracy .**

**Number measurements are not exact. They are often rounded.**

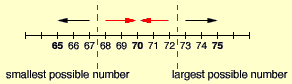
**1) The number of people on a bus is given as 50, correct to the nearest 10.**

**What is the lowest and highest possible number of people on the bus?**



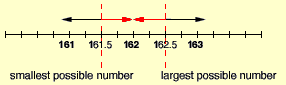
**2) The number of sweets in a jar is given as 70, correct to the nearest 5.**

**What is the smallest and largest possible number of sweets?**



**3) Mary's height is given as 162 cm, correct to the nearest cm.**

**Between which limits does Mary's height lie?**



**4) 6400 people went to a rugby game.**

**What could be the maximum and minimum number of people ?**

**. Rounding Appropriately .**

**When calculations are done with measured values the answer should be rounded appropriately:**

**3.32 m**

**17.147 m**

**+ 1.4 m Rounded to**

**= 21.867 m = 21.8 m (1dp.)**

**Adding / Subtracting**

**The answer should match the least**

**number of decimal places used**

**Multiply & Divide**

**12.437 × 63000**

**= 783 531 Rounded to**

**= 780 000 (2 sf.)**

**The answer should match the least**

**number of significant figures used**

**Both adding & Multiplying (+ - ×÷)**

**(12.5m + 36.24m + 38.68m) ÷ 7**

**= 12.48857143 Rounded to**

**= 12.5 m (3 sf.)**

**The answer should have a level of**

**accuracy appropriate to the problem**

**or situation.**

**. Rounding Error .**

**When doing multiple calculations to solve a problem DO NOT round early, Round at the end to avoid rounding errors.**

**Eg Part of a fun park ferris wheel**

1.2m

19.1m

A

**Calculate the angle A, then how many of these parts**

**will fit in one circle?**

**A = Tan-1(0.6 ÷ 19.1) = 1.79927572° = 2° rounded too early**

**Number = 360 ÷ 2 = 180 rounding error**

**Number = 360 ÷ 1.8 = 200**

**Number = 360 ÷ 1.79927572 = 200**

**If an answer can be left accurate then it should be**

**Eg solve 6x + 1 = 18 6x = 17**

**x = 17/6 or 2.83 or 25/6**

**Or if an answer is rounded then this should be written**

**A cube has volume of 84cm3 What is the length of one side?**

** 4.37951914 = 4.4 cm (1dp)**

**. Rounding Practice .**

**Round the following appropriately:**

**Note: all are measurements of length (m)**

**1) 12.4 + 9.2 =**

**2) 4.294 – 2.3 =**

**3) 5.3 + 12.47 =**

**4) 6.4 + 2.85 + 3.225 =**

**5) 145.3 – 12.22 =**

**6) 63.4 ÷5.4 =**

**7) 120 000 ÷ 823 =**

**8) 8440 × 0.15 =**

**9) 1 400 ×4825 =**

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**10)**

**11) Calculate the area of a circle (A = πr2) if the radius is 8.5m**

**12) Calculate the volume of a cone with radius 8cm and height 12.5cm**

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