

Having investigated the practical impact of inaccuracy and error I can use my knowledge of tolerance when choosing the required degree of accuracy to make real-life calculations.

MNU 4-01b

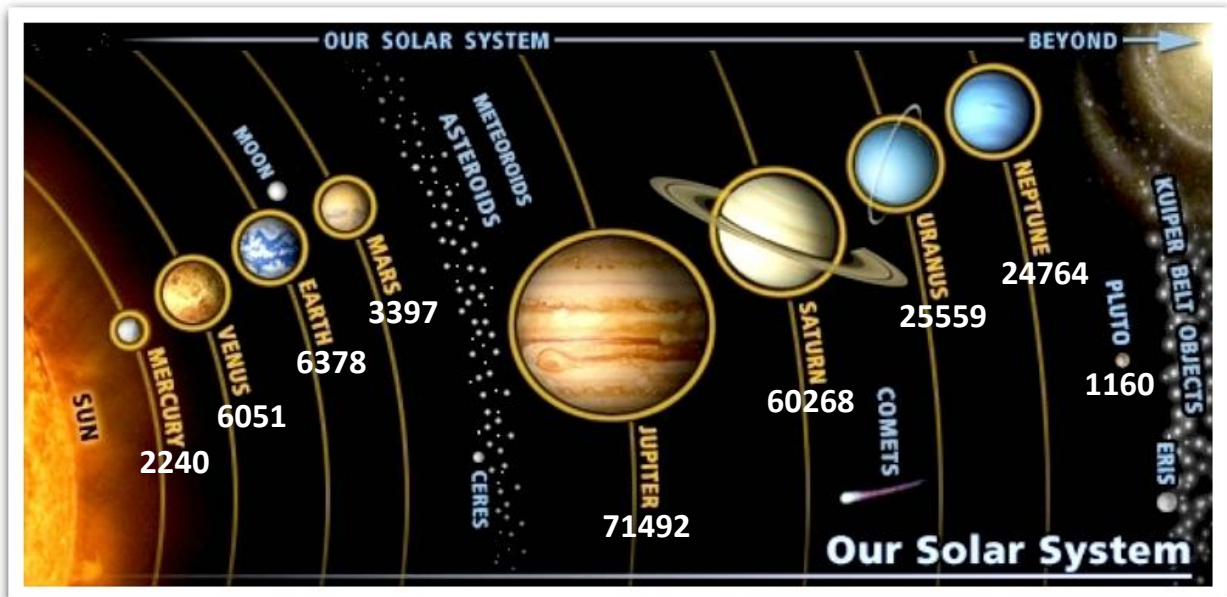
I can apply my knowledge and understanding of measure to everyday problems and tasks and appreciate the practical importance of accuracy when making calculations

MNU 4-11a

Significant Figures: Rounding

NB: We'll use the abbreviation "sf" to denote "Significant Figures"

1. This diagram shows Our Solar System. Included is the radius of planets (in km).



- Write down the radius of each planet, correct to 1 sf.
- Write down the radius of each planet, correct to 2 sf.
- Write down the radius of each planet, correct to 3 sf.



2. This chart gives some info about modern media. On average these events happen every 60 seconds.

a) Provide every statistic correct to 1sf.

b) Are there any statistics that surprise you?

3. The following information has been taken from a variety of sources (including NASA, National Centre for Health Statistics, World Health Organization, Red Cross...) and shows the probability of causes of death in the US in 2001.



Heart Disease
0.212765957



Cancer
0.142857143



Motor Vehicle Accident
0.010204082



Falling Down
0.004065041



Assault by Firearm
0.003076923



Electrocution
0.000201816



Drowning
0.000117758



Lightning Strike
0.000011919



Snake, Bee or other
Venomous Bite or Sting
0.000010000



Dog
Attack
0.000006770



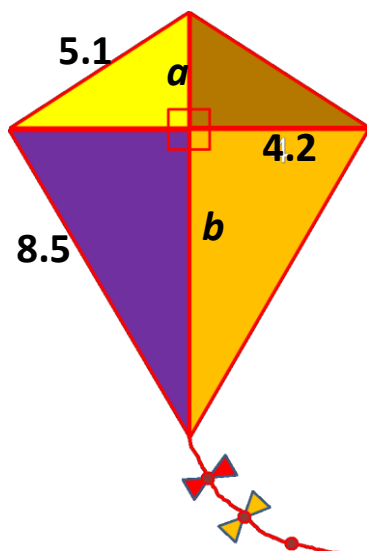
Fireworks
Discharge
0.000001625



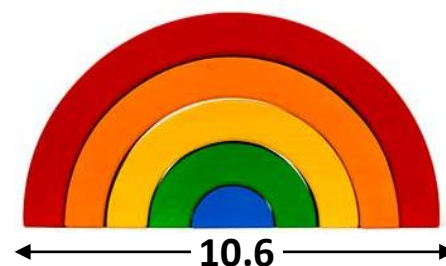
Roller
Coaster
0.000000014

Write each of these probabilities to 1sf, 2sf, 3sf where possible.

4. In these questions, give your answers to 2 sf.



- Calculate a .
- Calculate b .
- Use your previous answers to calculate the area of the kite.
- Calculate the area of the rainbow.
- Express the area of the kite as a percentage of the area of the rainbow (a semicircle).



ANSWERS:

	1 s.f.	2 s.f.	3 s.f.
Mercury	2000	2200	2240
Venus	6000	6100	6050
Earth	6000	6400	6380
Mars	3000	3400	3400
Jupiter	70000	71000	71500
Saturn	60000	60000	60300
Uranus	30000	26000	25600
Neptune	20000	25000	24800
Pluto	1000	1200	1160

ITEMS (CLOCKWISE FROM TOP LEFT CORNER)	To 1s.f.
Computers Sold	700
With Intel	600
Infected Computers	200
CDs	3,000,000
Data	2000
Windows CDs	500
Hacked Websites	10
Hack attempts	400
Movie rentals	1000
Ebay purchases	1000
Ebay on mobile	200
Paypal payments	200,000
Paypal by mobile	10,000
Farmville acres	1000
Blackberries	100
Instant Messengers	10,000,000
Porn Watchers	2,000,000
Google Revenue	80,000
Foursquare checkins	2000
Ink cartridges	3000
USB sales	4000
E-Waste tons	40
Kindle	20
Xbox	10
iPad	80
iPhone	900

	1 s.f.	2 s.f.	3 s.f.
Heart Disease	0.2	0.21	0.213
Cancer	0.1	0.14	0.143
Motor Accident	0.01	0.010	0.0102
Falling	0.004	0.0041	0.00407
Firearm	0.003	0.0031	0.00308
Electrocution	0.0002	0.00020	0.000202
Drowning	0.0001	0.00012	0.000118
Lightning	0.00001	0.000012	0.0000119
Bee/Snake	0.00001	0.000010	0.0000100
Dog Attack	0.000007	0.0000068	0.00000677
Firework	0.000002	0.0000016	0.00000163
Rollercoaster	0.00000001	0.000000014	0.0000000140

4. a) 2.9cm b) 7.4cm c) 43cm² d) 44cm² e) 98%