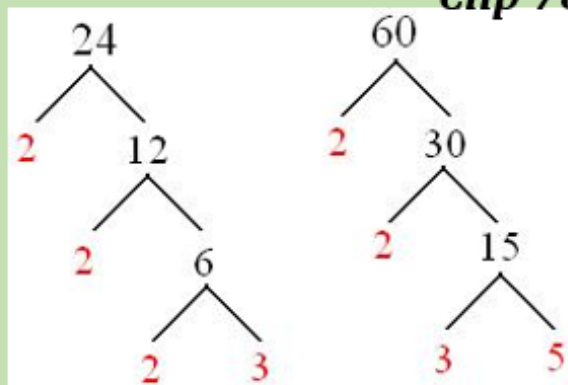


Express a number as a product of prime factors:

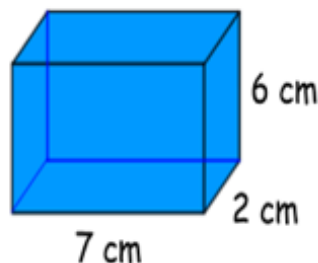
$$24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3$$

$$60 = 2^2 \times 3 \times 5$$

**(Maths Watch Clip 78)**



## YEAR 11 MATHEMATICS – TERM 3



**(MathsWatch Clip 114a)**

$$\text{Volume} = L \times W \times H = 7 \times 6 \times 2 = 42 \times 2 = 84\text{cm}^3$$

Total Surface Area

$$\text{Front: } 7 \times 6 = 42$$

$$\text{Back: } 7 \times 6 = 42$$

$$\text{Top: } 7 \times 2 = 14$$

$$\text{Bottom: } 7 \times 2 = 14$$

$$\text{Side: } 6 \times 2 = 12$$

$$\text{Side: } 6 \times 2 = 12$$

$$84$$

$$+ 28$$

$$+ 24$$

$$= 136\text{cm}^2$$

**(MathsWatch Clip 59)**

**Probabilities add/sum to 1:**

The table shows the probabilities of a dice landing on 2, 3, 4, 5 and 6:

Number on dice	1	2	3	4	5	6
Probability		0.17	0.18	0.09	0.15	0.1

Calculate the number of times this biased dice would land on 1 or 3 if it was thrown 200 times.

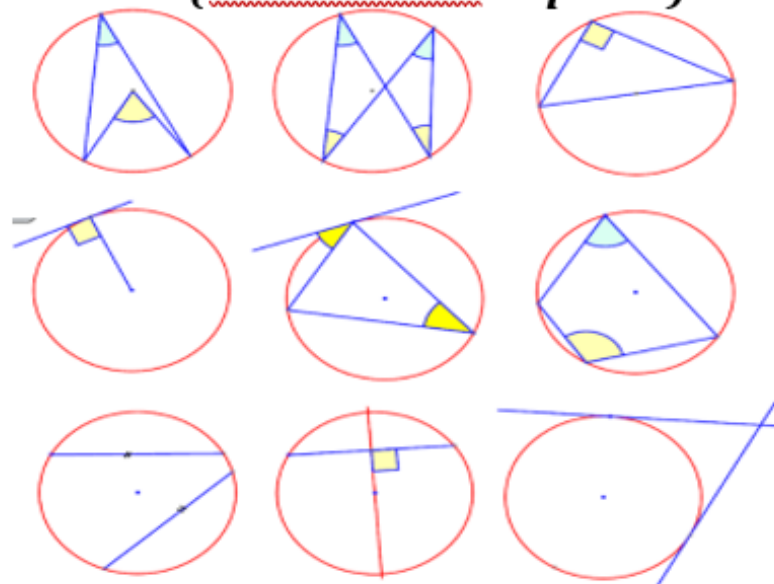
$$P(1) = 1 - (0.17 + 0.18 + 0.09 + 0.15 + 0.1) = 0.31$$

$$P(1 \text{ or } 3) = 0.31 + 0.18 = 0.49$$

$$0.49 \times 200 = 98 \quad \text{Answer: 98 times}$$

## Circle Theorems

**(MathsWatch Clip 183)**

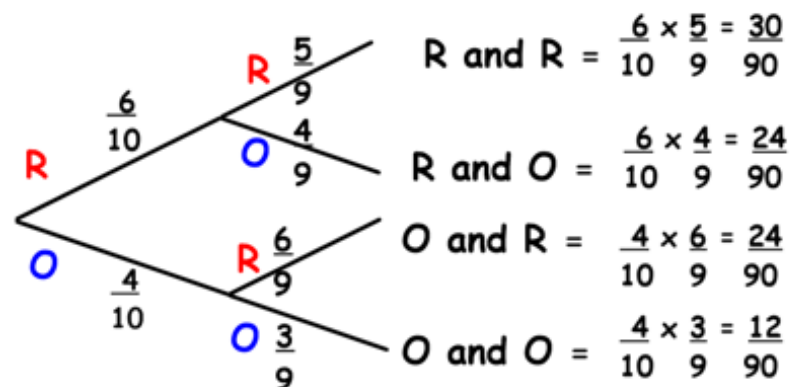


Jane wants to pick 2 flowers. There are 6 roses and 4 orchids.

Calculate the probability that she picks

a) the same flower

b) a different flower



$$\text{R and R} = \frac{6}{10} \times \frac{5}{9} = \frac{30}{90}$$

$$\text{R and O} = \frac{6}{10} \times \frac{4}{9} = \frac{24}{90}$$

$$\text{O and R} = \frac{4}{10} \times \frac{6}{9} = \frac{24}{90}$$

$$\text{O and O} = \frac{4}{10} \times \frac{3}{9} = \frac{12}{90}$$

**Same flower:**

R and R OR O and O

$$\frac{30}{90} + \frac{12}{90} = \frac{42}{90}$$

**Different flower:**

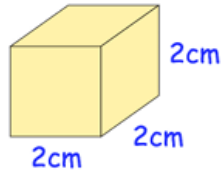
R and O OR O and R

$$\frac{24}{90} + \frac{24}{90} = \frac{48}{90}$$

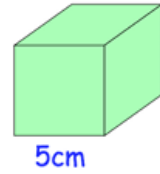
\* remember once you have taken 1 the first time, total is 1 less

Question 1: Work out the surface area of each of the following cubes.

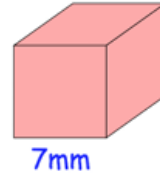
(a)



(b)

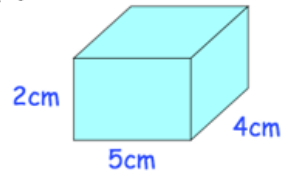


(c)

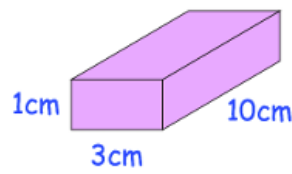


Question 2: Work out the surface area of each of the following cuboids.

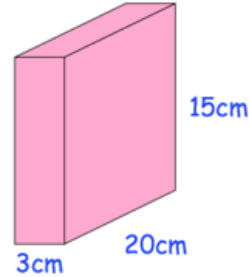
(a)



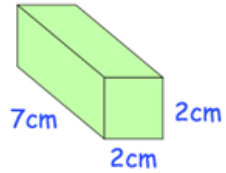
(b)



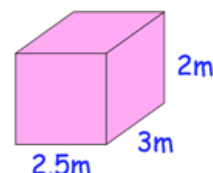
(c)



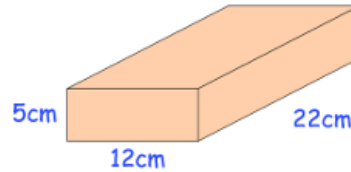
(d)



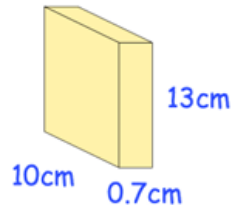
(e)



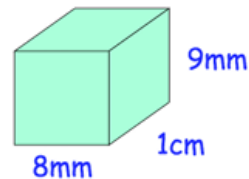
(f)



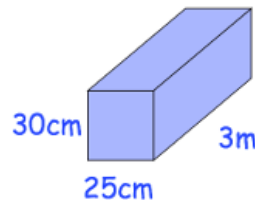
(g)



(h)



(i)



Question 1: Write each of these numbers as the product of their prime factors.

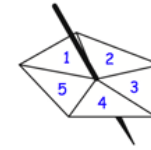
- |        |        |        |        |        |        |         |
|--------|--------|--------|--------|--------|--------|---------|
| (a) 10 | (b) 12 | (c) 20 | (d) 18 | (e) 16 | (f) 30 | (g) 100 |
| (h) 26 | (i) 24 | (j) 27 | (k) 42 | (l) 33 | (m) 38 | (n) 64  |

Question 11:

Darcy has a biased spinner.

A spinner has sections labelled 1, 2, 3, 4 and 5.

The table below shows information about some of the probabilities



Number	1	2	3	4	5
Probability	x	0.15	0.05	0.2	0.35

Work out the value of x.

Question 12:

Frederick organises a raffle for his school fayre.

The top prize is a ride in a hot air balloon, which will be won by 1 ticket.

Altogether Frederick sells 700 raffle tickets.

Miss Robinson buys 5 tickets for the raffle.

Work out the probability that Miss Robinson does **not** win.



Question 13:

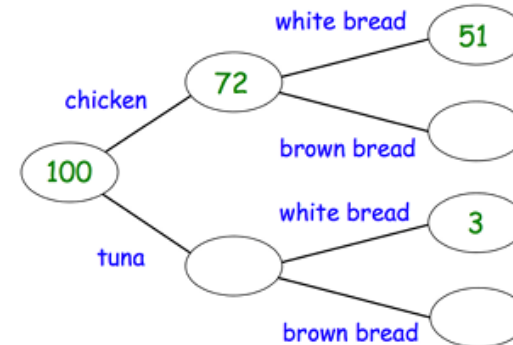
There are 20 chocolates in a box.

Some of the chocolates contain nuts and the rest do not.

The probability that a chocolate containing nuts is picked at random from the box is 0.6

How many of the chocolates in the box contain nuts?

(a)



(b)

