# M6 =9 days to go!

1 A normal six sided dice is rolled 240 times.

It lands on six a total of 20 times.

Do you think the dice is fair?

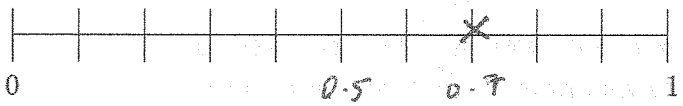
**Give a reason for your answer.**

Normal dice
$p(six) = \frac{1}{6}$
so you would expect $\frac{1}{6} \times 240 = 40$

Answer No because you expect 40 sixes. [2]

6 **(a)** The probability that a bus is on time is 0.7

Mark with an X on the scale, the probability that the bus is **not** on time.




[1]

**(b)** A fair dice is thrown once.

Explain why the probability of getting a prime number is greater than the probability of getting a factor of 5

p(prime) = 3/6 is bigger than 2/6

[3]

1 not prime, 2 prime, 3 prime, 4 not prime, 5 prime, 6 not prime — p(prime) = 3/6

1 factor of 5, 2 not, 3 not, 4 not, 5 factor of 5, 6 not — p(factor of 5) = 2/6

12 There are 30 passengers in a train carriage.

The probability that a passenger in the train carriage is male is $\frac{2}{5}$ $\quad \frac{2}{5}$ of 30 = 12

At the next station 5 people get off and no-one gets on.

The probability that a passenger in the train carriage is male is still $\frac{2}{5}$

How many females are still on the train?

18 female | 12 male

Then (25) after 5 leave.

$\frac{2}{5}$ of 25 = 10 so 2 men get off
and 3 women get off

Answer 15 [3]

The equation

$$x^3 + 2x = 50$$

has a solution between 3 and 4. Guess & Check

Use trial and improvement to find this solution.
Give ~~your answer correct~~ to 1 decimal place.
You must show all your working.

| x | $x^3 + 2x = 50$ | TB or TS |
|---|---|---|
| 3 | $3^3 + 2\times3 = 33$ | Too Small |
| 3.4 | $3.4^3 + 2\times3.4 = 46.104$ | Too Small |
| 3.5 | $3.5^3 + 2\times3.5 = 49.875$ | Too Small |
| 3.6 | $3.6^3 + 2\times3.6 = 53.856$ | Too Big |
| 3.7 | $3.7^3$ | Too Big |
| 3.55 | $3.55^3 + 2\times3.55 = 51.839$ | Too Big |

Too small ✓ Too Big Too Big
3.5 3.55 3.6

x = 3.5 .....

(4)