**QUESTION**

M&M sweets are of varying colours and the different colours occur in different proportions. The table below gives the probability that a randomly chosen M&M has each colour, but the value for tan candies is missing.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Colour | Brown | Red | Yellow | Green | Orange | Tan |
| Probability | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | ? |

(a) What value must the missing probability be?

(b) You draw an M&M at random from a packet. What is the probability of each of the following events?

1. You get a brown one or a red one.
2. You don’t get a yellow one.
3. You don’t get either an orange one or a tan one.
4. You get one that is brown or red or yellow or green or orange or tan.

**SOLUTION:**

(a) The probabilities must sum to 1.0 Therefore, the answer is 1−0.3−0.2−0.2−0.1−0.1 = 1−0.9 = .1.

(b) Simply add and subtract the appropriate probabilities.

1. 0.3 + 0.2 = 0.5 since it can’t be brown and red simultaneously (the events are incompatible).
2. 1 − P(yellow) = 1 − 0.2 = 0.8.
3. 1 − P(orange or tan) = 1 − P(orange) − P(tan) = 1 − 0.1 − 0.1 = 0.8 (since orange and
4. tan are incompatible events).
5. This must happen; the probability is 1.0