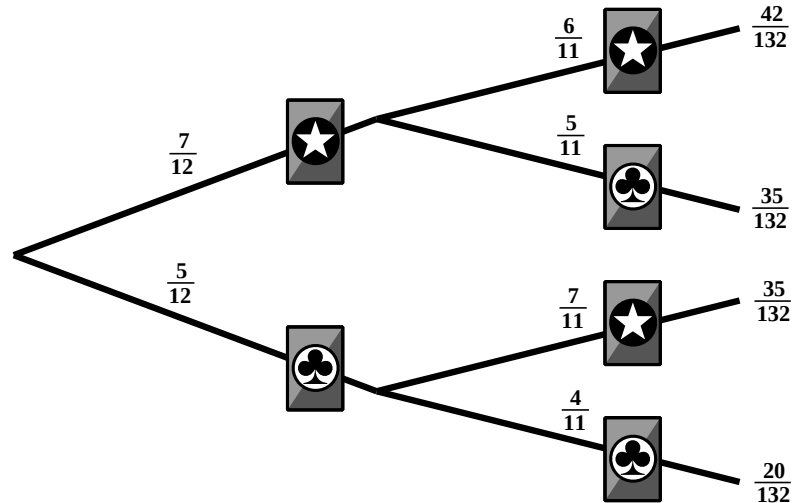


9.3 Answers

GCSE Mathematics Probability

9.3.1 Solution (Introductory Example)

(i)



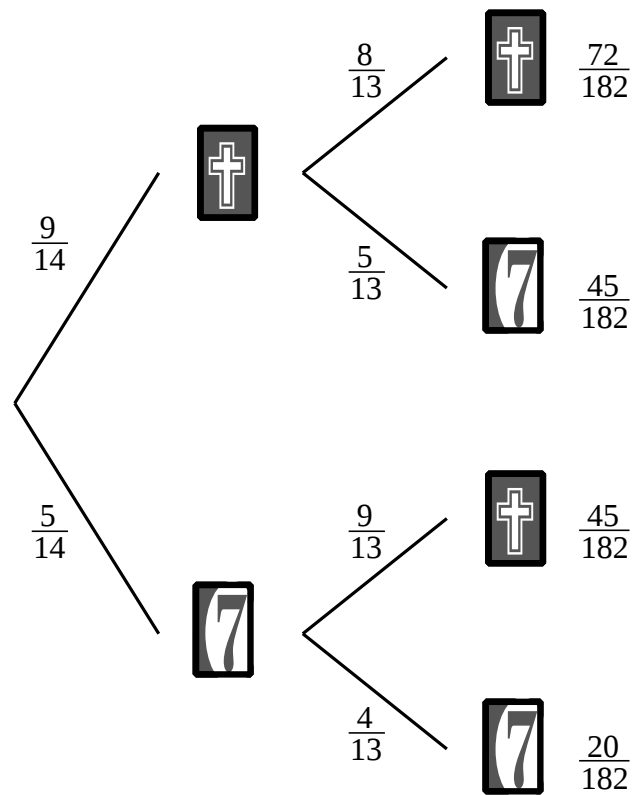
(ii) $\frac{62}{132} = \frac{31}{66}$ or 0.470

(iii) $\frac{70}{132} = \frac{35}{66}$ or 0.530

9.3.2 Solutions (9.2 Exercise)

Answer 1

(i)

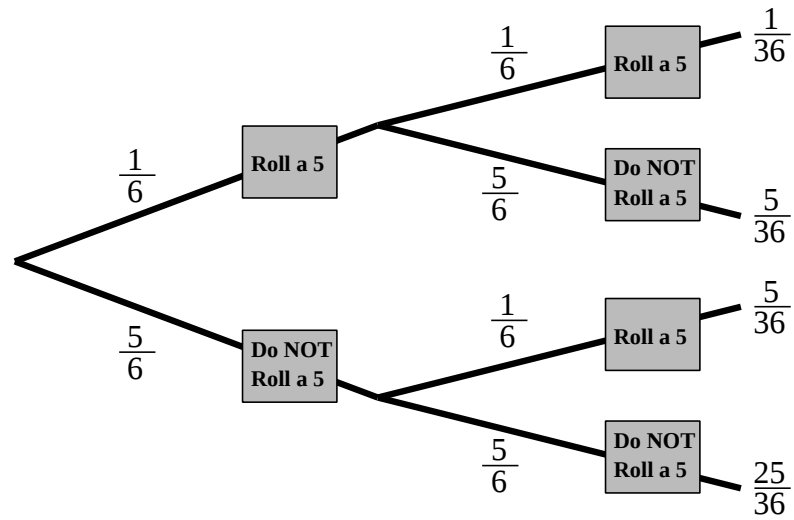


(ii) $\frac{92}{182} = \frac{46}{91}$ or 0.505

(iii) $\frac{90}{182} = \frac{45}{91}$ or 0.495

Answer 2

(a)



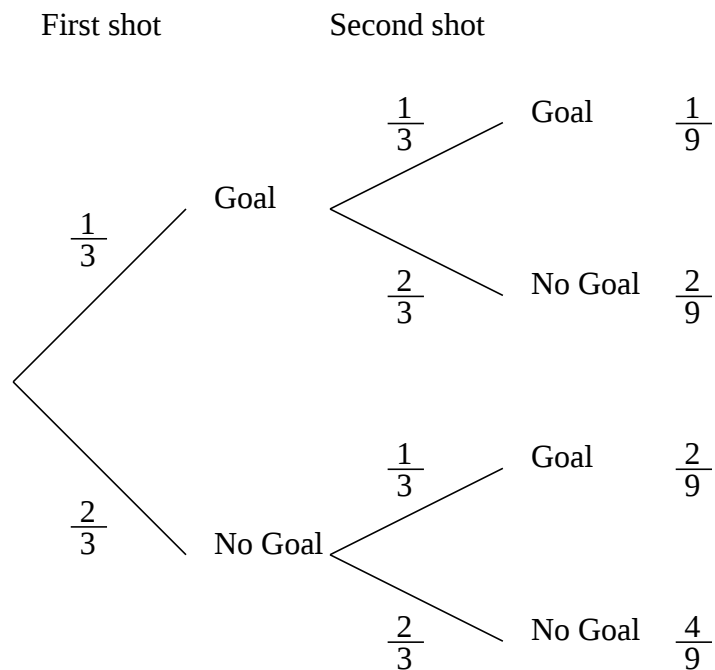
- (b) (i) $\frac{1}{36}$
(ii) $\frac{10}{36}$

(c)

$$3 \times \left(\frac{1}{6} \times \frac{5}{6} \times \frac{5}{6} \right) = \frac{75}{216} \quad \text{which is about } 0.347$$

Answer 3

(a)



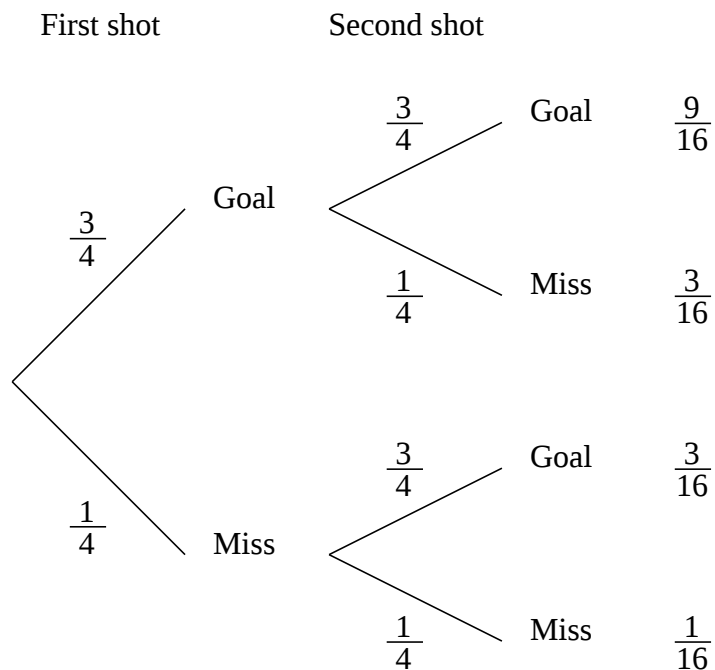
- (b) $\frac{5}{9}$

Answer 4**(a)**

$$p(R, R) = \frac{7}{9} \times \frac{6}{8} = \frac{42}{72} \text{ or } \frac{7}{12} \text{ or } 0.583$$

(b)

$$p(R, W) + p(W, R) = 2 \times \left(\frac{7}{9} \times \frac{2}{8} \right) = \frac{28}{72} \text{ or } \frac{7}{18} \text{ or } 0.388$$

Answer 5**(a)**

(b) (i) $\frac{9}{16}$ or 0.5625

(ii) $\frac{6}{16}$ or $\frac{3}{8}$ or 0.375

(c)

$$\begin{aligned}
 1 - p(M, M, M) - p(G, G, G) &= 1 - \frac{1}{64} - \frac{27}{64} \\
 &= \frac{36}{64} \text{ or } \frac{9}{16} \text{ or } 0.5625
 \end{aligned}$$

Answer 6**(a)**

$$p(1, 1, 1) = \frac{1}{216} \text{ or } 0.00463$$

(b)

$$3 \times \left(\frac{1}{6} \times \frac{5}{6} \times \frac{5}{6} \right) = \frac{75}{216} \text{ or } 0.347$$

Answer 7

$$\text{(i) } \quad \frac{8}{121} \text{ or } 0.0661$$

$$\text{(ii) } \quad \frac{8}{121} \text{ or } 0.0661$$

$$\text{(iii) } \quad \frac{16}{121} \text{ or } 0.132$$

$$\text{(iv) } \quad \frac{12}{121} \text{ or } 0.0992$$

$$\text{(v) } \quad \frac{33}{121} \text{ or } 0.273$$

Answer 8

$$\text{(i) } \quad \frac{1}{8} \text{ or } 0.125$$

$$\text{(ii) } \quad 0$$

$$\text{(iii) } \quad \frac{3}{8} \text{ or } 0.375$$

Answer 9

$$\frac{1}{8} \text{ or } 0.125$$

Answer 10

$$\text{(i) } \quad \frac{1}{2}$$

$$\text{(ii) } \quad \frac{1}{2}$$

$$\text{(iii) } \quad \frac{1}{4}$$

$$\text{(iv) } \quad \frac{1}{4}$$

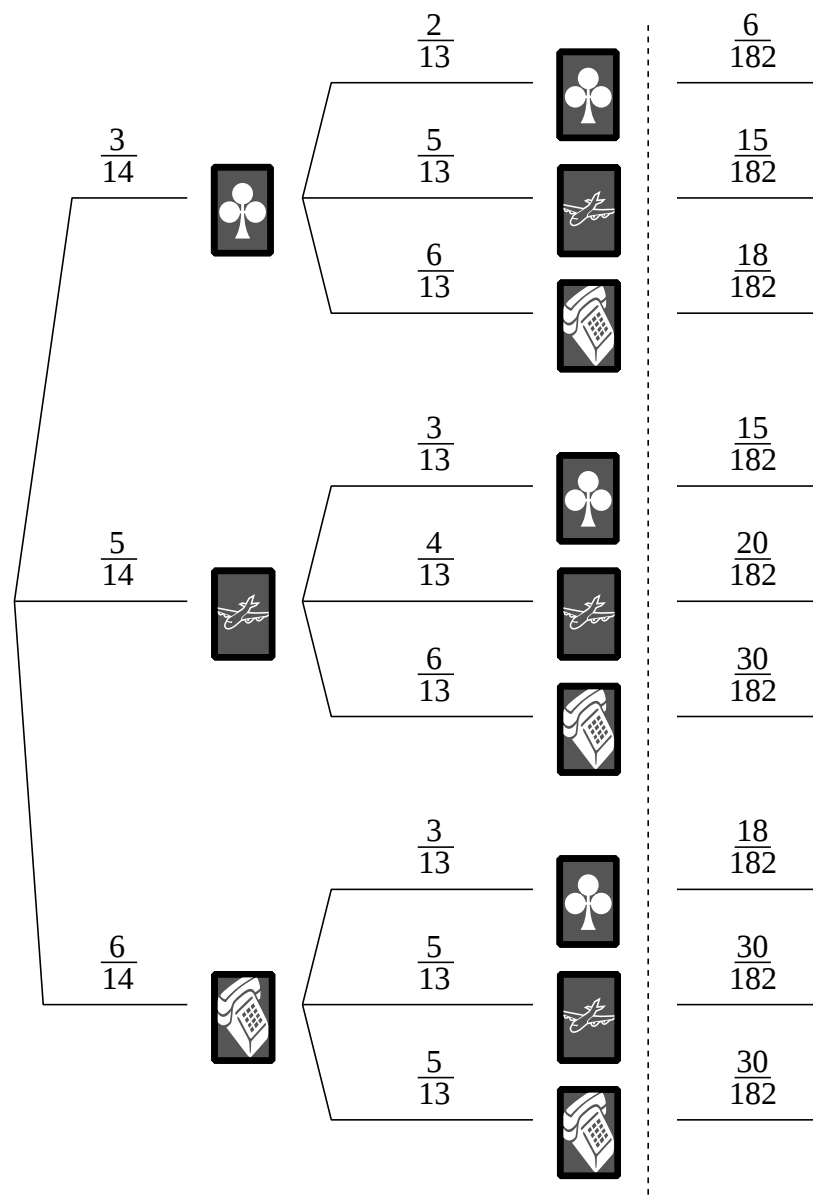
$$\text{(v) } \quad \frac{1}{8}$$

$$\text{(vi) } \quad \frac{1}{8}$$

$$\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{64} + \dots = 1$$

Answer 11

(i)



(ii) $\frac{56}{182}$ or $\frac{4}{13}$ or 0.308 or 31%

Answer 12

(i) $\frac{9}{25}$ (ii) $\frac{2}{25}$ (iii) $\frac{16}{25}$

Answer 13

21 vowels, 60 in total $\therefore \frac{441}{3600}$ or $\frac{49}{400}$ or 0.1225

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Teachers may obtain detailed worked solutions to the exercises by email from MHHShrewsbury@Gmail.com