Year 9 Probability – Mixed Practice

ANSWER KEY

HappyKids.fit

Answers and worked solutions · 30 questions

A. Mixed practice (mixed order)

1. **1/3**

Numbers that work: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29

P = 10/30 = 1/3

2. **0.13**

Independent events: P(A and B) = P(A) × P(B)

0.2 × 0.65 = 0.13

3. **1/15**

Numbers that work: 15, 30

P = 2/30 = 1/15

4. **P(music) = 0.15; P(chess or music) = 0.5**

All four add up to 1: 1 − 0.2 − 0.35 − 0.3 = 0.15

P(chess or music) = 0.35 + 0.15 = 0.5

5. **2/5**

Numbers that work: 16 of them

P = 16/40 = 2/5

6. **P(music) = 0.05; P(art or music) = 0.2**

All four add up to 1: 1 − 0.15 − 0.25 − 0.55 = 0.05

P(art or music) = 0.15 + 0.05 = 0.2

7. **1/20**

Numbers that work: 12

P = 1/20

8. **0.085**

P(not A) = 1 − 0.9 = 0.1; P(not B) = 1 − 0.15 = 0.85

0.1 × 0.85 = 0.085

9. **P(snowy) = 0.45; P(sunny or snowy) = 0.7**

All four add up to 1: 1 − 0.25 − 0.2 − 0.1 = 0.45

P(sunny or snowy) = 0.25 + 0.45 = 0.7

10. **0.64**

P(not A) = 1 − 0.2 = 0.8; P(not B) = 1 − 0.2 = 0.8

0.8 × 0.8 = 0.64

11. **7/12**

Numbers that work: 21 of them

P = 21/36 = 7/12

12. 7/20

The grid has 5 × 4 = 20 equally likely outcomes; 7 of them work
P = 7/20

13. P(snowy) = 0.2; P(rainy or snowy) = 0.25

All four add up to 1: 1 − 0.15 − 0.6 − 0.05 = 0.2
P(rainy or snowy) = 0.05 + 0.2 = 0.25

14. x = 0.1; P(4) = 0.2

The probabilities add up to 1: 0.25 + 0.35 + 4x = 1
4x = 0.4, so x = 0.1
P(4) = 2x = 0.2

15. 5/76

5 of the 76 fit
P = 5/76

16. 3/20

Numbers that work: 1, 4, 9, 16, 25, 36
P = 6/40 = 3/20

17. 2/3

The grid has 6 × 3 = 18 equally likely outcomes; 12 of them work
P = 12/18 = 2/3

18. 0.52

Independent events: P(A and B) = P(A) × P(B)
0.8 × 0.65 = 0.52

19. No, not independent: the captain cannot be chosen again, so the choices change.

Ask: does the first event change the probability of the second?
Here the captain cannot be chosen again, so the choices change
So they are not independent

20. expected 25; far fewer blues than expected after many spins, so the spinner may be biased

P(blue) = 1/5
Expected: 1/5 × 125 = 25
Observed 14: a big difference for 125 spins

21. 1/4. The events are independent because the first one is put back.

P(blue first) = 4/8; it is put back, so P(blue second) = 4/8
4/8 × 4/8 = 1/4

22. 3/8

P(heads) = 1/2; P(greater than 2) = 3/4
Independent, so multiply: 1/2 × 3/4 = 3/8

23. 1/8

The grid has 3 × 8 = 24 equally likely outcomes; 3 of them work
P = 3/24 = 1/8

24. The outcomes are mutually exclusive and cover everything, so they must add up to 1, but they add up to 1.1. P(late) = 0.5.

Total: 0.35 + 0.15 + 0.6 = 1.1
Mutually exclusive outcomes that cover everything add up to 1
P(late) = 1 – 0.35 – 0.15 = 0.5

25. 43/89

43 of the 89 fit
P = 43/89

26. P(snowy) = 0.35; P(cloudy or snowy) = 0.4

All four add up to 1: 1 – 0.1 – 0.05 – 0.5 = 0.35
P(cloudy or snowy) = 0.05 + 0.35 = 0.4

27. 1/5

Numbers that work: 1, 4, 9, 16
P = 4/20 = 1/5

28. x = 0.05; P(2) = 0.1

The probabilities add up to 1: 0.35 + 0.5 + 3x = 1
3x = 0.15, so x = 0.05
P(2) = 2x = 0.1

29. Farah's: 247/500 = 0.494, because many more trials give a more reliable estimate

Kofi: 2/10 from only 10 trials
Farah: 247/500 = 0.494 from 500 trials
More trials usually give an estimate closer to the true probability

30. 5/7; 2/7

Total: 5 + 6 + 9 + 8 = 28
plays football or tennis (or both): 20, so 5/7
plays neither: 8, so 2/7