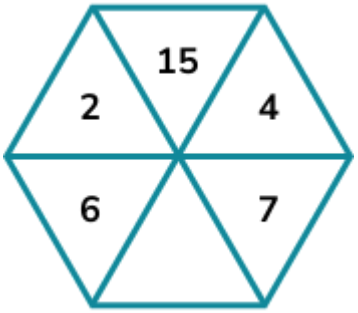
# Probability - Worksheet

**1. Which number could be added to this spinner to make it more likely that the spinner will land on an odd number than a prime number?**




**a)** 3

**b)** 9

**c)** 5

**d)** 11

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**2. Ifan rolls a fair dice, with sides labelled A, B, C, D, E and F. What is the probability that the dice lands on a vowel?**

**a)** $\frac{1}{6}$

**b)** $\frac{1}{3}$

**c)** $\frac{1}{2}$

**d)** $\frac{2}{3}$

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# Probability - Worksheet

**3. Max tested a coin to see whether it was fair. The table shows the results of his coin toss experiment:**

| Heads | Tails |
|---|---|
| 26 | 41 |

**a)** $\frac{1}{2}$

**b)** $\frac{26}{41}$

**c)** $\frac{26}{67}$

**d)** $\frac{26}{100}$

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**4. Grace rolled two dice. She then did something with the two numbers shown. Here is a sample space diagram showing all the possible outcomes:**

| | | Dice 2 | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| Dice 1 | 1 | 0 | 1 | 2 | 3 | 4 | 5 |
| | 2 | 1 | 0 | 1 | 2 | 3 | 4 |
| | 3 | 2 | 1 | 0 | 1 | 2 | 3 |
| | 4 | 3 | 2 | 1 | 0 | 1 | 2 |
| | 5 | 4 | 3 | 2 | 1 | 0 | 1 |
| | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

**What did Grace do with the two numbers shown on the dice?**

**a)** Add them together

**b)** Subtract the number on dice 2 from the number on dice 1

**c)** Multiply them

**d)** Subtract the smaller number from the bigger number

# Probability - Worksheet

**5. Alice has some red balls and some blue balls in a bag. Altogether she has 25 balls. Alice picks one ball from the bag. The probability that Alice picks a red ball is x and the probability that Alice picks a blue ball is 4x. Work out how many blue balls are in the bag.**

**a)** 6

**b)** 100

**c)** 20

**d)** 5

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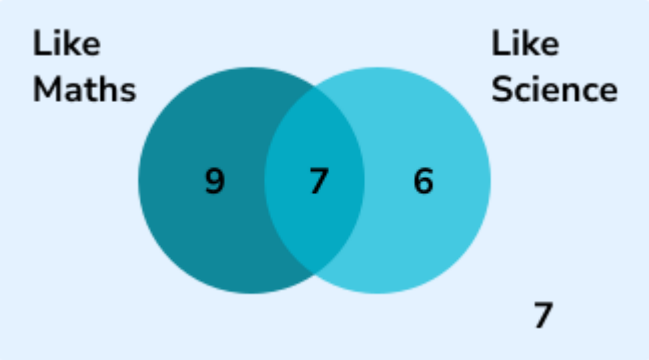
**6. Arthur asked the students in his class whether they like maths and whether they like science. He recorded his results in the venn diagram below.**




**How many students don't like science?**

**a)** 16

**b)** 23

**c)** 7

**d)** 6

# Probability - Worksheet

**7. A restaurant offers the following options:**
**Starter – soup or salad**
**Main – chicken, fish or vegetarian**
**Dessert – ice cream or cake**

**How many possible different combinations of starter, main and dessert are there?**

**a)** 7

**b)** 12

**c)** 8

**d)** 27

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**8. There are 18 girls and 12 boys in a class. $\frac{2}{9}$ of the girls and $\frac{1}{4}$ of the boys walk to school. One of the students who walks to school is chosen at random. Find the probability that the student is a boy.**

**a)** $\frac{12}{30}$

**b)** $\frac{3}{7}$

**c)** $\frac{1}{4}$

**d)** $\frac{3}{12}$

# Probability - Worksheet

**9. Rachel flips a biased coin. The probability that she gets two heads is 0.16. What is the probability that she gets two tails?**

**a)** 0.84

**b)** 0.6

**c)** 0.36

**d)** 0.7056

# Probability - Exam Questions

**Q1. I have a big tub of jelly beans. The probability of picking each different colour of jelly bean is shown below:**

| Colour | Red | Yellow | Green | Purple | Orange |
|---|---|---|---|---|---|
| Probability | 0.2 | 0.15 | 0.1 | 0.3 | |

**If I were to pick 60 jelly beans from the tub, how many orange jelly beans would I expect to pick?**

**a)** 25

**b)** 12

**c)** 0

**d)** 15

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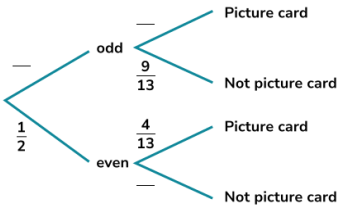
**Q2. Dexter runs a game at a fair. To play the game, you must roll a dice and pick a card from a deck of cards.**
**To win the game you must roll an odd number and pick a picture card. The game can be represented by the tree diagram below.**




**Dexter charges players £1 to play and gives £3 to any winners. If 260 people play the game, how much profit would Dexter expect to make?**

**a)** £65

**b)** £260

**c)** £140

**d)** £120

# Probability - Exam Questions

**Q3. A coin is tossed three times. Work out the probability of getting two heads and one tail.**

**a)** $\frac{1}{8}$

**b)** $\frac{3}{8}$

**c)** $\frac{1}{2}$

**d)** $\frac{1}{6}$

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**Q4. 200 people were asked about which athletics event they thought was the most exciting to watch. The results are shown in the table below.**

| | 100m | Long jump | Javelin |
|---|---|---|---|
| Male | 56 | 30 | 24 |
| Female | 32 | 29 | 29 |

**A person is chosen at random. Given that that person chose 100m, what is the probability that the person was female?**

**a)** $\frac{32}{200}$

**b)** $\frac{32}{100}$

**c)** $\frac{32}{88}$

**d)** $\frac{32}{56}$

# Probability - Exam Questions

**Q5. Sam asked 50 people whether they like vegetable pizza or pepperoni pizza.**
**37 people like vegetable pizza.**
**25 people like both.**
**3 people like neither.**

**Sam picked one of the 50 people at random. Given that the person he chose likes pepperoni pizza, find the probability that they don't like vegetable pizza.**

**a)** $\frac{12}{50}$

**b)** $\frac{3}{50}$

**c)** $\frac{12}{35}$

**d)** $\frac{10}{35}$

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**Q6. There are 12 marbles in a bag. There are n red marbles and the rest are blue marbles. Nico takes 2 marbles from the bag. Write an expression involving n for the probability that Nico takes one red marble and one blue marble.**

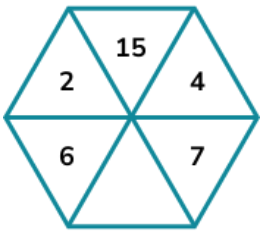
**a)** $\frac{n(12-n)}{66}$

**b)** $\frac{n(n-1)}{132}$

**c)** $\frac{(12-n)+(11-n)}{132}$

**d)** $\frac{n(12-n)}{132}$

# Probability - Answers

| | Question | Answer |
|---|---|---|
| 1 | **Which number could be added to this spinner to make it more likely that the spinner will land on an odd number than a prime number?**<br>  <br>**a)** 25<br>**b)** 12<br>**c)** 0<br>**d)** 15 | **b)** 9 |
| 2 | **Ifan rolls a fair dice, with sides labelled A, B, C, D, E and F. What is the probability that the dice lands on a vowel?**<br>**a)** $\frac{1}{6}$<br>**b)** $\frac{1}{3}$<br>**c)** $\frac{1}{2}$<br>**d)** $\frac{2}{3}$ | **b)** $\frac{1}{3}$ |
| 3 | **Max tested a coin to see whether it was fair. The table shows the results of his coin toss experiment:**<br>**Heads** **Tails**<br>**26** **41**<br>**a)** $\frac{1}{2}$<br>**b)** $\frac{26}{41}$<br>**c)** $\frac{26}{67}$<br>**d)** $\frac{26}{100}$ | **c)** $\frac{26}{67}$ |

# Probability - Answers

<table>
<tr>
<td>4</td>
<td>Grace rolled two dice. She then did something with the two numbers shown. Here is a sample space diagram showing all the possible outcomes:
<table>
<tr><td></td><td colspan="7">Dice 2</td></tr>
<tr><td rowspan="7">Dice 1</td><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>2</td><td>1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>3</td><td>2</td><td>1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td><td>1</td><td>2</td></tr>
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<tr><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr>
</table>
a) Add them together<br>
b) Subtract the number on dice 2 from the number on dice 1<br>
c) Multiply them<br>
d) Subtract the smaller number from the bigger number</td>
<td>d) Subtract the smaller number from the bigger number</td>
</tr>
<tr>
<td>5</td>
<td>Alice has some red balls and some blue balls in a bag. Altogether she has 25 balls. Alice picks one ball from the bag. The probability that Alice picks a red ball is x and the probability that Alice picks a blue ball is 4x. Work out how many blue balls are in the bag.<br>
a) 6<br>
b) 100<br>
c) 20<br>
d) 5</td>
<td>c) 20</td>
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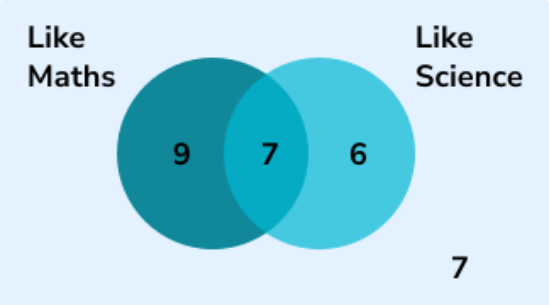
</table>

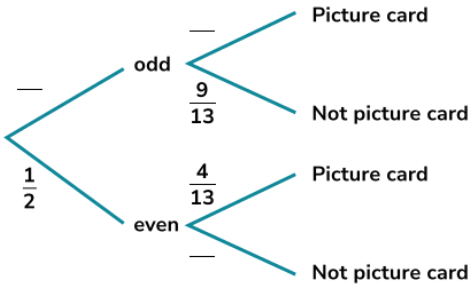
# Probability - Answers

| | | |
|---|---|---|
| 6 | **6. Arthur asked the students in his class whether they like maths and whether they like science. He recorded his results in the venn diagram below.**<br>  <br><br>**a)** 16<br>**b)** 23<br>**c)** 7<br>**d)** 6 | **a)** 16 |
| 7 | **A restaurant offers the following options:**<br>**Starter – soup or salad**<br>**Main – chicken, fish or vegetarian**<br>**Dessert – ice cream or cake**<br><br>**How many possible different combinations of starter, main and dessert are there?**<br>**a)** 7<br>**b)** 12<br>**c)** 8<br>**d)** 27 | **b)** 12 |
| 8 | **There are 18 girls and 12 boys in a class. $\frac{2}{9}$ of the girls and $\frac{1}{4}$ of the boys walk to school. One of the students who walks to school is chosen at random. Find the probability that the student is a boy.**<br>**a)** $\frac{12}{30}$<br>**b)** $\frac{3}{7}$<br>**c)** $\frac{1}{4}$<br>**d)** $\frac{3}{12}$ | **b)** $\frac{3}{7}$ |

# Probability - Answers

| | | |
|---|---|---|
| 9 | **Rachel flips a biased coin. The probability that she gets two heads is 0.16. What is the probability that she gets two tails?**<br><br>**a)** 0.85<br>**b)** 0.6<br>**c)** 0.36<br>**d)** 0.7056 | **c)** 0.36 |

# Probability - Answers

<table>
<tr><th></th><th>Exam Questions</th><th>Answer</th></tr>
<tr><td>Q1.</td><td>I have a big tub of jelly beans. The probability of picking each different colour of jelly bean is shown below:<br><table><tr><td>Colour</td><td>Red</td><td>Yellow</td><td>Green</td><td>Purple</td><td>Orange</td></tr><tr><td>Probability</td><td>0.2</td><td>0.15</td><td>0.1</td><td>0.3</td><td></td></tr></table>If I were to pick 60 jelly beans from the tub, how many orange jelly beans would I expect to pick?<br>a) 25<br>b) 12<br>c) 0<br>d) 15</td><td>d) 15</td></tr>
<tr><td>Q2.</td><td>Dexter runs a game at a fair. To play the game, you must roll a dice and pick a card from a deck of cards.<br>To win the game you must roll an odd number and pick a picture card. The game can be represented by the tree diagram below.<br>  <br>Dexter charges players £1 to play and gives £3 to any winners. If 260 people play the game, how much profit would Dexter expect to make?<br>a) £65<br>b) £260<br>c) £140<br>d) £120</td><td>c) £140</td></tr>
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# Probability - Answers

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|---|---|---|
| Q3. | **A coin is tossed three times. Work out the probability of getting two heads and one tail.**<br>**a)** $\frac{1}{8}$<br>**b)** $\frac{3}{8}$<br>**c)** $\frac{1}{2}$<br>**d)** $\frac{1}{6}$ | **b)** $\frac{3}{8}$ |
| Q4. | **200 people were asked about which athletics event they thought was the most exciting to watch. The results are shown in the table below.**<br>\| | 100m | Long jump | Javelin \|<br>\| Male \| 56 \| 30 \| 24 \|<br>\| Female \| 32 \| 29 \| 29 \|<br>**a)** $\frac{32}{200}$<br>**b)** $\frac{32}{100}$<br>**c)** $\frac{32}{88}$<br>**d)** $\frac{32}{56}$ | **c)** $\frac{32}{88}$ |
| Q5. | **Sam asked 50 people whether they like vegetable pizza or pepperoni pizza.**<br>**37 people like vegetable pizza.**<br>**25 people like both.**<br>**3 people like neither.**<br><br>**Sam picked one of the 50 people at random. Given that the person he chose likes pepperoni pizza, find the probability that they don't like vegetable pizza.**<br><br>**a)** $\frac{12}{50}$<br>**b)** $\frac{3}{50}$<br>**c)** $\frac{12}{35}$<br>**d)** $\frac{10}{35}$ | **d)** $\frac{10}{35}$ |

# Probability - Answers

| | | |
|---|---|---|
| Q6. | **There are 12 marbles in a bag. There are n red marbles and the rest are blue marbles. Nico takes 2 marbles from the bag. Write an expression involving n for the probability that Nico takes one red marble and one blue marble.**<br>**a)** $\frac{n(12-n)}{66}$<br>**b)** $\frac{n(n-1)}{132}$<br>**c)** $\frac{(12-n)+(11-n)}{132}$<br>**d)** $\frac{n(12-n)}{132}$ | **a)** $\frac{n(12-n)}{66}$ |