Mutually exclusive events - Worksheet

Skill

Group A - Decimals

Work out:

1) $0.1 + 0.1$

2) $0.1 + 0.2$

3) $0.1 + 0.5$

4) $0.2 + 0.2$

5) $0.2 + 0.3$

6) $0.2 + 0.5$

7) $0.1 + 0.1 + 0.1$

8) $0.1 + 0.4 + 0.1$

9) $0.1 + 0.4 + 0.3$

10) $0.2 + 0.2 + 0.2$

11) $0.2 + 0.1 + 0.2$

12) $0.2 + 0.2 + 0.5$

Group B - Fractions

Work out:

1) $\frac{1}{5} + \frac{1}{5}$

2) $\frac{1}{5} + \frac{2}{5}$

3) $\frac{2}{5} + \frac{2}{5}$

4) $\frac{1}{6} + \frac{1}{6}$

5) $\frac{2}{6} + \frac{1}{6}$

6) $\frac{2}{6} + \frac{3}{6}$

7) $\frac{1}{7} + \frac{1}{7}$

8) $\frac{1}{7} + \frac{3}{7}$

9) $\frac{2}{7} + \frac{3}{7}$

10) $\frac{1}{8} + \frac{1}{8}$

11) $\frac{3}{8} + \frac{1}{8}$

12) $\frac{3}{8} + \frac{2}{8}$

Group C - Subtraction

Work out:

1) $1 - (0.1 + 0.1)$

2) $1 - (0.1 + 0.2)$

3) $1 - (0.1 + 0.5)$

4) $1 - (0.1 + 0.1 + 0.1)$

5) $1 - (0.1 + 0.4 + 0.1)$

6) $1 - (0.1 + 0.4 + 0.3)$

7) $1 - (\frac{1}{5} + \frac{1}{5})$

8) $1 - (\frac{1}{5} + \frac{2}{5})$

9) $1 - (\frac{1}{7} + \frac{1}{7})$

10) $1 - (\frac{1}{7} + \frac{3}{7})$

11) $1 - (\frac{1}{6} + \frac{1}{6})$

12) $1 - (\frac{1}{6} + \frac{2}{6})$

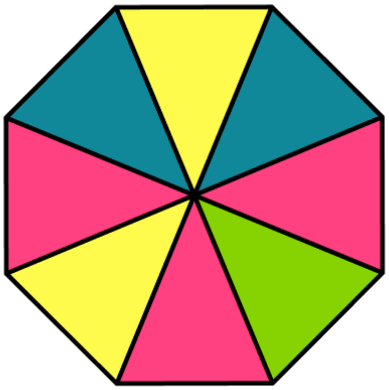
Mutually exclusive events - Worksheet

Applied

1) **(a)** A fair 6-sided dice is rolled. It is numbered 1 to 6.
What is the probability of rolling a 1 or a 2?

(b) What is the probability of rolling an odd number?

2) Here is a spinner.



There are 8 sections: 3 sections are red, 2 are yellow, 1 is green and the rest are blue.

(a) Work out the probability of the spinner landing on yellow or green.

(b) Work out the probability of the spinner landing on red or blue.

Mutually exclusive events - Worksheet

3) A set of cards has the letters MATHEMATICS on them.

A card is chosen at random.

(a) Work out the probability that the card is C or S.

(b) Work out the probability that the card is A or E or I.

4) A bag contains a large number of counters. The table below shows the probabilities.

Colour	Red	Blue	Yellow	Green
Probability	0.1	0.6		

(a) Work out the probability that a counter chosen at random is Red or Blue.

(b) The probability of picking a yellow counter is the same as the probability of picking a green counter.

Work out the probability of picking a Yellow counter.

Mutually exclusive events - Exam Questions

1) Here are 5 cards

A card is chosen at random.

What is the probability of picking J or a Q?

.....

(2 marks)

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2) **(a)** Adam plays a game with an ordinary, fair dice.

If he rolls a 1, he wins.
If he rolls a 2 or 3 he loses.
If he rolls a 4, 5 or 6 he rolls again.

Work out the probability that Adam wins.

.....

(1)

(b) Work out the probability that Adam loses.

.....

(2)

(3 marks)

Mutually exclusive events - Exam Questions

3) **(a)** A spinner has 9 sections. 5 of the sections are red, 2 are blue and the rest are white. The spinner is spun. Work out the probability that the spinner lands on red.

.....

(1)

(b) Work out the probability that the spinner lands on blue or white.

.....

(2)

(3 marks)

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4) **(a)** A bag contains a large number of discs. Each disc has a letter, A, B, C or D. The table shows the probability of picking each letter.

Colour	A	B	C	D
Probability		0.4	0.3	

A disc is chosen at random.

Work out the probability of choosing a B or a C.

.....

(2)

(b) There are twice as many discs with A than discs with D.
Work out the probability of choosing a disc with A.

.....

(3)

(5 marks)

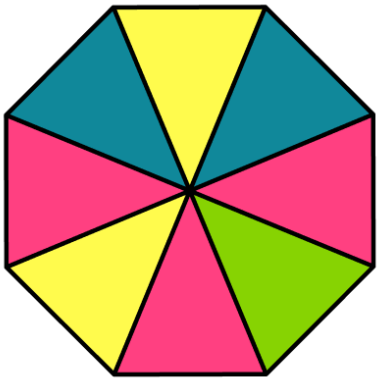
Mutually exclusive events - Answers

	Question	Answer
	Skill Questions	
Group A	Work out: **1)** $0.1 + 0.1$ **2)** $0.1 + 0.2$ **3)** $0.1 + 0.5$ **4)** $0.2 + 0.2$ **5)** $0.2 + 0.3$ **6)** $0.2 + 0.5$ **7)** $0.1 + 0.1 + 0.1$ **8)** $0.1 + 0.4 + 0.1$ **9)** $0.1 + 0.4 + 0.3$ **10)** $0.2 + 0.2 + 0.2$ **11)** $0.2 + 0.1 + 0.2$ **12)** $0.2 + 0.2 + 0.5$	 **1)** 0.2 **2)** 0.3 **3)** 0.6 **4)** 0.4 **5)** 0.5 **6)** 0.7 **7)** 0.3 **8)** 0.6 **9)** 0.8 **10)** 0.6 **11)** 0.5 **12)** 0.9
Group B	Work out: **1)** $\frac{1}{5} + \frac{1}{5}$ **2)** $\frac{1}{5} + \frac{2}{5}$ **3)** $\frac{2}{5} + \frac{2}{5}$ **4)** $\frac{1}{6} + \frac{1}{6}$ **5)** $\frac{2}{6} + \frac{1}{6}$ **6)** $\frac{2}{6} + \frac{3}{6}$ **7)** $\frac{1}{7} + \frac{1}{7}$ **8)** $\frac{1}{7} + \frac{3}{7}$	 **1)** $\frac{2}{5}$ **2)** $\frac{3}{5}$ **3)** $\frac{4}{5}$ **4)** $\frac{2}{6} = \frac{1}{3}$ **5)** $\frac{3}{6} = \frac{1}{2}$ **6)** $\frac{5}{6}$ **7)** $\frac{2}{7}$ **8)** $\frac{4}{7}$

Mutually exclusive events - Answers

Group B contd	**9)** $\frac{2}{7} + \frac{3}{7}$ **10)** $\frac{1}{8} + \frac{1}{8}$ **11)** $\frac{3}{8} + \frac{1}{8}$ **12)** $\frac{3}{8} + \frac{2}{8}$	**9)** $\frac{5}{7}$ **10)** $\frac{2}{8} = \frac{1}{4}$ **11)** $\frac{4}{8} = \frac{1}{2}$ **12)** $\frac{5}{8}$
Group C	Work out: **1)** $1 - (0.1 + 0.1)$ **2)** $1 - (0.1 + 0.2)$ **3)** $1 - (0.1 + 0.5)$ **4)** $1 - (0.1 + 0.1 + 0.1)$ **5)** $1 - (0.1 + 0.4 + 0.1)$ **6)** $1 - (0.1 + 0.4 + 0.3)$ **7)** $1 - (\frac{1}{5} + \frac{1}{5})$ **8)** $1 - (\frac{1}{5} + \frac{2}{5})$ **9)** $1 - (\frac{1}{7} + \frac{1}{7})$ **10)** $1 - (\frac{1}{7} + \frac{3}{7})$ **11)** $1 - (\frac{1}{6} + \frac{1}{6})$ **12)** $1 - (\frac{1}{6} + \frac{2}{6})$	**1)** 0.8 **2)** 0.7 **3)** 0.4 **4)** 0.7 **5)** 0.4 **6)** 0.2 **7)** $\frac{3}{5}$ **8)** $\frac{2}{5}$ **9)** $\frac{5}{7}$ **10)** $\frac{3}{7}$ **11)** $\frac{4}{6} = \frac{2}{3}$ **12)** $\frac{3}{6} = \frac{1}{2}$

Mutually exclusive events - Answers

	Question	Answer
	Applied Questions	
1)	**a)** A fair 6-sided dice is rolled. It is numbered 1 to 6. What is the probability of rolling a 1 or a 2?	**a)** $\frac{2}{6} = \frac{1}{3}$
	b) Work out the probability of rolling an odd number.	**b)** $\frac{3}{6} = \frac{1}{2}$
2)	**a)** Here is a spinner.  There are 8 sections: 3 sections are red, 2 are yellow, 1 is green and the rest are blue. Work out the probability of the spinner landing on yellow or green.	**a)** $\frac{3}{8}$
	b) Work out the probability of the spinner landing on red or blue.	**b)** $\frac{5}{8}$
3)	**a)** A set of cards has the letters MATHEMATICS on them.  A card is chosen at random. Work out the probability that the card is C or S.	**a)** $\frac{2}{11}$
	b) Work out the probability that the card is A or E or I.	**b)** $\frac{4}{11}$

Mutually exclusive events - Answers

4)	**a)** A bag contains a large number of counters. The table below shows the probabilities. | Colour	Red	Blue	Yellow	Green
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Probability	0.1	0.6		| Work out the probability that a counter chosen at random is Red or Blue. **b)** The probability of picking a yellow counter is the same as the probability of picking a green counter. Work out the probability of picking a Yellow counter.	**a)** 0.7 **b)** 0.15

Mutually exclusive events - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	Here are 5 cards  A card is chosen at random. What is the probability of picking J or a Q?	$\frac{2}{5} + \frac{2}{5}$ $\frac{4}{5}$	(1) (1)
2) (a)	Adam plays a game with an ordinary, fair dice. If he rolls a 1, he wins. If he rolls a 2 or 3 he loses. If he rolls a 4, 5 or 6 he rolls again. Work out the probability that Adam wins.	(a) $\frac{1}{6}$	(1)
(b)	Work out the probability that Adam loses.	(b) $\frac{1}{6} + \frac{1}{6}$ $\frac{2}{6}$ **or** $\frac{1}{3}$	(1) (1)
3) (a)	A spinner has 9 sections. 5 of the sections are red, 2 are blue and the rest are white. The spinner is spun. Work out the probability that the spinner lands on red.	(a) $\frac{5}{9}$	(1)
(b)	Work out the probability that the spinner lands on blue or white.	(b) $\frac{2}{9} + \frac{2}{9}$ $\frac{4}{9}$	(1) (1)

Mutually exclusive events - Mark Scheme

<table>
<tr>
<td>4) (a)</td>
<td>A bag contains a large number of discs.

Each disc has a letter, A, B, C or D.

The table shows the probability of picking each letter.

<table>
<tr><td>Colour</td><td>A</td><td>B</td><td>C</td><td>D</td></tr>
<tr><td>Probability</td><td></td><td>0.4</td><td>0.3</td><td></td></tr>
</table>

A disc is chosen at random.

Work out the probability of choosing a B or a C.</td>
<td>(a) $0.4 + 0.3$

0.7</td>
<td>(1)

(1)</td>
</tr>
<tr>
<td>(b)</td>
<td>There are twice as many discs with A than discs with D.

Work out the probability of choosing a disc with A.</td>
<td>(b) $1 - 0.7 = 0.3$

$0.3 \div 3 \times 2$

$= 0.2$</td>
<td>(1)

(1)

(1)</td>
</tr>
</table>