GRAYS TUITION CENTRE – Online Tutoring

WEEK: 23

Week Beginning: (24/08/2020)

Subject: MATHS

Year: 9

Lesson Objective:

- We will look at independent variables or in other words the 'AND' rule where we multiply probabilities together to get an expected outcome.
- We will also look into the 'OR' rule which requires to add probabilities together to get an expected outcome

Class Worksheets

- Pages 248-252 GCSE Maths 4-9 Elmwood (Blue book)

Homework

- Complete remaining Classwork for HW

Additional Notes

- All homework from last week will be marked at the beginning of the lesson. Make sure that you have your homework with you in the lesson and are ready to mark it.
- Also prepare any questions if you struggled with the homework so I can help you.
- All lesson worksheets and homework for next week (**due Week 24**) worksheets can be found below

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M Independent events – the 'AND' rule

Multiplying probabilities ('AND' rule)

If events A *and* B are independent.
p(A **and** B) = p(A) × p(B)

The probability that Jack walks to work is $\frac{1}{4}$.

The probability that Jack catches the bus to go home is $\frac{3}{5}$.

What is the probability that one day Jack does *not* walk to work and returns home by bus.

p(not walk and bus home to work) = p(not walk to work) × p(bus home)

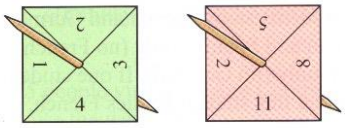
$$= \frac{3}{4} \times \frac{3}{5}$$

$$= \frac{9}{20}$$

M8.8

1. A coin and a dice are thrown. Find the probability of getting 'tails' on the coin and a '4' on the dice.

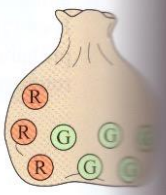
2. A coin and a dice are thrown. Find the probability of getting tails on the coin and an even number on the dice.

3. 

These two spinners are spun.
What is the probability of getting:
(a) a '1' and an '8'?
(b) two odd numbers?

4. A card is taken from a pack of playing cards and a coin is thrown.
What is the probability of obtaining:
(a) the King of Hearts and a 'head' on the coin?
(b) a picture card (J, Q or K) and 'tails' on the coin?

5. A bag contains 3 red beads and 5 green beads. If I remove one bead at random, replace it then take another bead, what is the probability that:
(a) both beads are red?
(b) both beads are green?



6. If a dice is thrown three times, what is the probability of obtaining three sixes?

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7

Each letter above is written on a card. The cards are shuffled and a card is chosen randomly. The card is replaced then another card is taken. What is the probability that:

(a) both cards are the letter 'C'?

(b) both cards are the letter 'I'?

8 The probability that Sam has toast for breakfast is 0·3. The probability that he has a cup of tea with his breakfast is 0·8.

On Tuesday morning what is the probability that Sam has:

(a) toast and tea?

(b) toast and no tea?

(c) no toast and no tea?

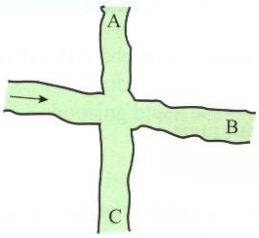
9 A card is taken from a pack of cards, replaced then another card is taken.

What is the probability that:

(a) both cards are Kings?

(b) both cards are red?

10 If a coin is thrown six times, what is the probability that the coin will land on tails each time?

11 

Every day Megan takes her dog for a walk. She always reaches a crossroads and has three choices of route. The probability of taking route A, B or C is equal.

On Monday to Friday, what is the probability that she takes route C every day?

12 A bag contains 7 white beads and 4 green beads. If I remove one bead at random, replace it then take another bead, what is the probability that both beads are green?

Can you still?

Mixed

1 Pair off each ordinary number and standard form number below (beware: one number has no pair):

$5{\cdot}6 \times 10^{2}$ | 560 | 0.0065 | 6500 | $6{\cdot}5 \times 10^{-3}$ | $5{\cdot}6 \times 10^{-2}$ | 0·056 | 0·56 | $6{\cdot}5 \times 10^{3}$

2 Expand $(2a + 5)(3a + 4)$

3 Write 0·86868686... as a fraction.

4 Use the formula $v = at^2$ to work out v when $a = 3{\cdot}1 \times 10^{-6}$ and $t = 5{\cdot}5 \times 10^{-4}$. Give the answer in standard form.

5 Factorise $10x^2 - x - 2$

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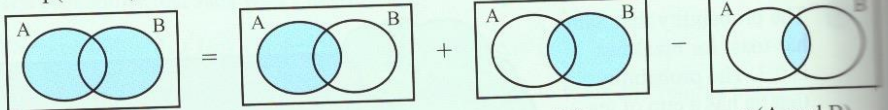
M The 'OR' rule

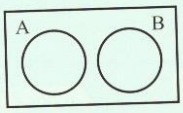
Key Facts

$p(A \cup B) = p(A) + p(B) - p(A \cap B)$



p(A or B) = p(A) + p(B) – p(A and B)

If $p(A \cap B) = 0$ then A and B do not overlap.



Events A and B are mutually exclusive – if one event occurs, the other cannot.

p(A or B) = p(A) + p(B) when A and B are mutually exclusive

M8.9

1 Which of the following pairs of events are mutually exclusive.

(a) choose a club or an ace from a pack of cards.
(b) win or lose a football match.
(c) the sun shines or it rains.
(d) wear a blue tie or brown shoes.
(e) get a '3' or a '4' on a dice.

2 Emma has one drink for her breakfast. The table shows the probability of her choosing each drink.

Tea	Coffee	Orange juice	Grapefruit juice
0·4	x	0·3	0·1

(a) What is the probability of Emma choosing orange juice or grapefruit juice?
(b) What is the probability of Emma choosing coffee?
(c) During the month of April, how many days would you expect Emma to choose tea?

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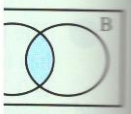
(A ∩ B)



A and B)

of her

uit juice?

ıa to

3 In a Games lesson, students play football, basketball or hockey.
The probability of playing football is 0·4.
The probability of playing basketball is 0·5.

(a) What is the probability of playing football or basketball?

(b) What is the probability of playing hockey?

4 In a football match the probability of Everton winning is 0·5. The probability of losing is 0·3.
What is the probability of Everton drawing?

5 The probability of choosing a King from a pack of cards is $\frac{1}{13}$.

The probability of choosing a club from a pack of cards is $\frac{1}{4}$.

Work out the probability of choosing a King or a club when a card is removed from a pack.

6 A car is selected from a garage.
The probability of a red car is 0·5.
The probability of the car being a Fiesta is 0·3.
The probability of the car being a red Fiesta is 0·15.
Work out the probability of choosing a red car or a Fiesta.

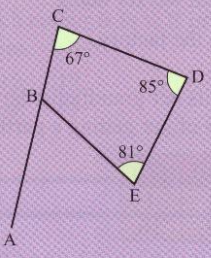
7 Kerry has a drawer full of blue, black or red socks.
The probability of choosing blue socks is 0·5.
The probability of choosing black socks is 0·3.

(a) What is the probability of selecting blue or black socks?

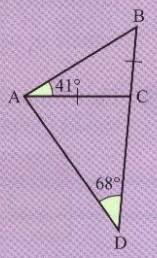
(b) What is the probability of selecting red socks?

Can you still?

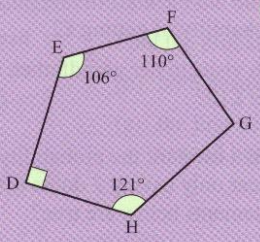
Finding angles

1 

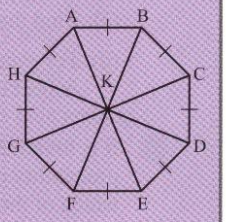
Find AB̂E.

2 

Find CÂD.

3 

Find FĜH.

4 

Find BĈK.

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8 Four people play a game of poker. The probability of each person winning the game is shown below in the table.

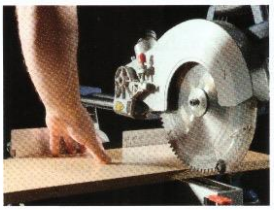
Darryl	Simon	Dan	Mark
0·35	0·25	0·25	x

(a) What is the probability of Darryl or Simon winning?

(b) What is the probability of Mark winning?

(c) If they play 60 times, how many times would you expect Dan to win?

9 People at Hansen's Kitchens work in the factory or the offices.



If a worker is chosen at random from Hansen's Kitchens, the probability of the person working in the factory is $\frac{5}{18}$. The probability of the worker being female is $\frac{4}{9}$. The probability of a female factory worker being chosen is $\frac{1}{9}$. Work out the probability of a chosen worker being female or working in the factory.

10 Each time Cassie visits her grandfather he gives her some money. The table shows the probability of her getting a particular amount of money.

£2	£5	£10	£20
x	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$

(a) Find the probability of getting £5 or £10.

(b) Find the probability of not getting £20.

(c) Find the probability of getting £2.

(d) For every 16 visits to her grandfather, how many times would Cassie expect to get £10?

11 It is found that in a car park the probability of a blue car is 0·2 and the probability of a car only having 2 doors is 0·15. If a car is chosen at random, which of the statements below are true?

(a) p(not 2 doors) = 0·85

(b) p(blue car or 2 doors) = 0·35

(a) p(not blue) = 0·8

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