

Name

4th Year November Assessment 2018

Middle Sets

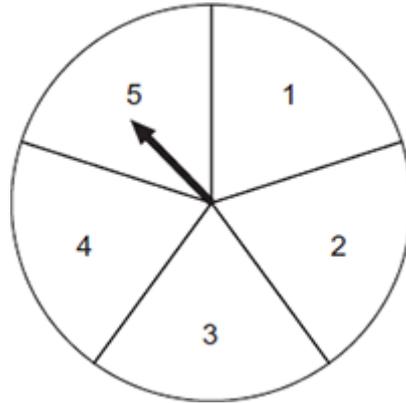
1 Hour

53 Marks

Calculators are allowed

(1 hour)

- 1) Matt made this spinner.
He spins the arrow 200 times.



- (a) How many times would you expect the arrow to stop on the number 5 if the spinner is fair?

(2)

- (b) The table shows the number of times the arrow stops on each number.

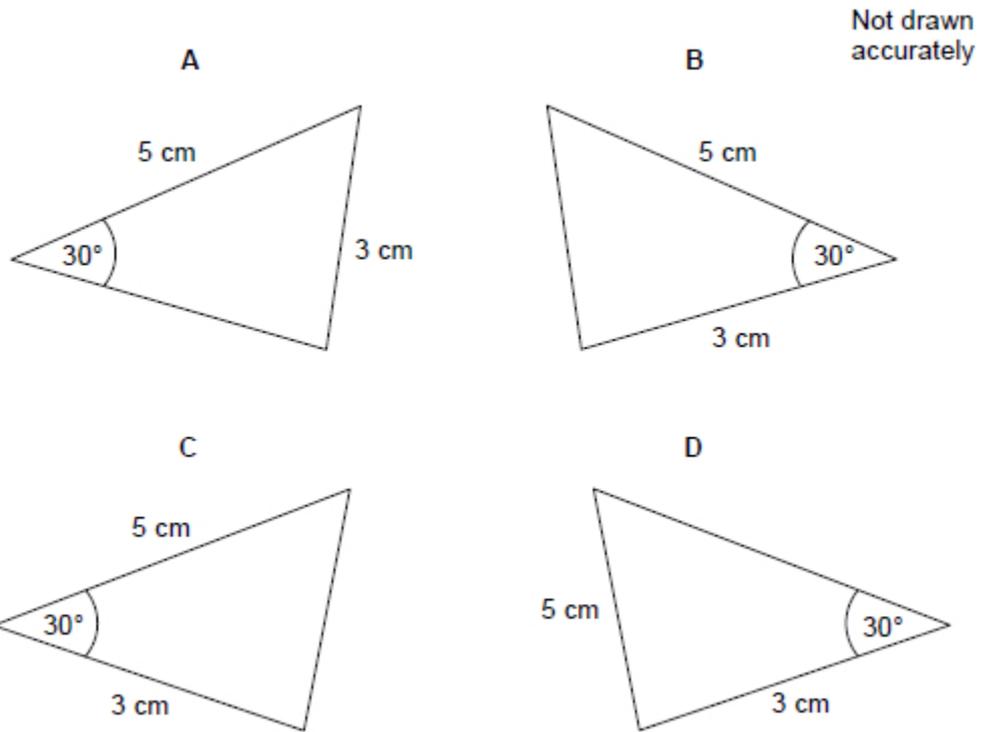
Stops on	1	2	3	4	5
Number of times	32	41	65	27	35

Do you think the spinner is fair?
Give a reason for your answer.

(2)

(Total 4 marks)

2) Here are four triangles.



(a) Which **two** triangles are congruent?
Circle your answers.

A

B

C

D

(1)

(b) Circle the reason for your answer to part (a).
Circle your answers.

SSS

ASA

SAS

RHS

(1)

(Total 2 marks)

- 3) (a) A school has 400 boys and 500 girls.

The probability that a boy is vegetarian is 0.1

The probability that a girl is vegetarian is 0.2

Estimate the total number of vegetarians in the school.

(3)

- (b) There are ten prefects in the school.

Four of the prefects are vegetarian.

Two of the prefects are chosen at random to have lunch with a visitor.

Show that the probability that they are **both** vegetarian is $\frac{2}{15}$

(2)

(Total 5 marks)

- 4) Solve the simultaneous equations

$$5x + 6y = 3$$

$$2x - 3y = 12$$

Do **not** use trial and improvement.

You **must** show your working.

(Total 3 marks)

5) The probability that a biased coin lands on heads is $\frac{2}{3}$

The coin is spun twice.

Circle the probability of two heads.

$$\frac{2}{9}$$

$$\frac{4}{6}$$

$$\frac{4}{9}$$

$$\frac{4}{3}$$

(Total 1 mark)

6) Amy increases a number by 24%
The answer is 6014.

What number did she start with?

(Total 3 marks)

7) At a concert
3 adult and 4 child tickets cost £23
1 adult and 5 child tickets cost £15

Work out the cost of an adult ticket and the cost of a child ticket.

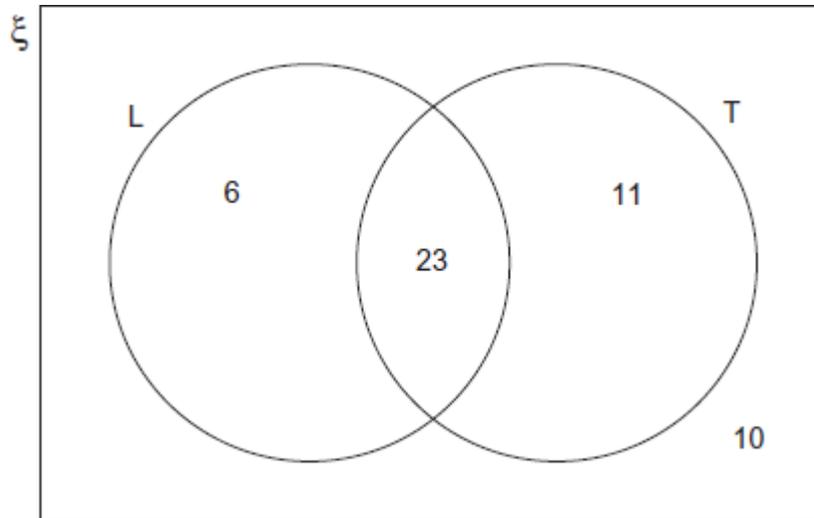
Cost of an adult ticket £ Cost of a child ticket £

(Total 4 marks)

8) Here is a Venn diagram.
It shows information about the number of students who have a laptop or a TV.

Set L represents students with a laptop.

Set T represents students with a TV.



There are 50 students altogether.

A student is chosen at random.

(a) Work out the probability that the student has a laptop.

Answer _____ (1)

(b) Work out the probability that the student has a laptop **and** a TV.

Answer _____ (1)

(c) Complete the sentence to make it true.

The probability that the student _____
_____ is $\frac{11}{50}$

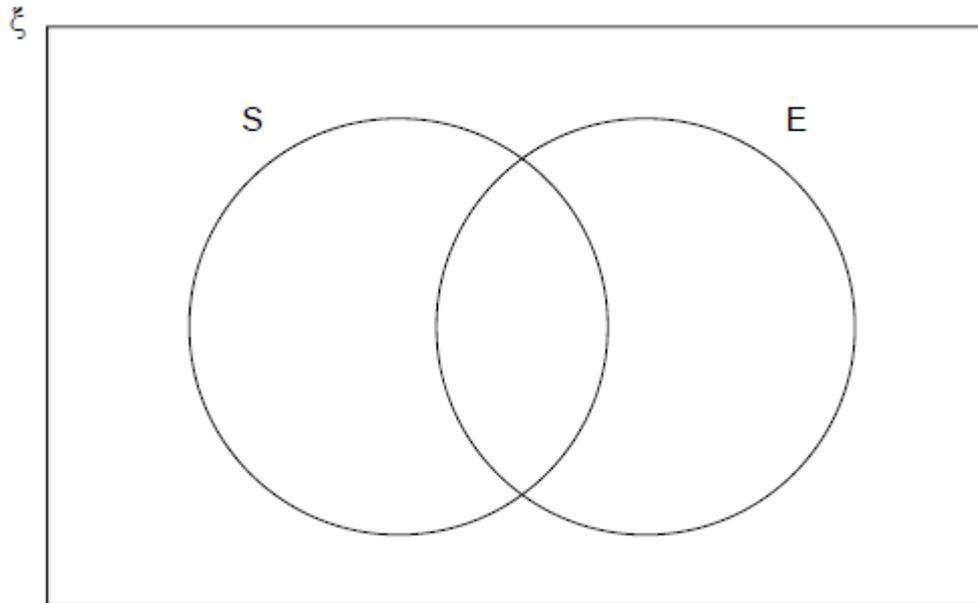
(1)
(Total 3 marks)

9) $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$

S = square numbers

E = even numbers

(a) Complete the Venn diagram.



(3)

(b) One of the numbers is chosen at random.

Write down $P(S \cap E)$

Answer _____

(1)

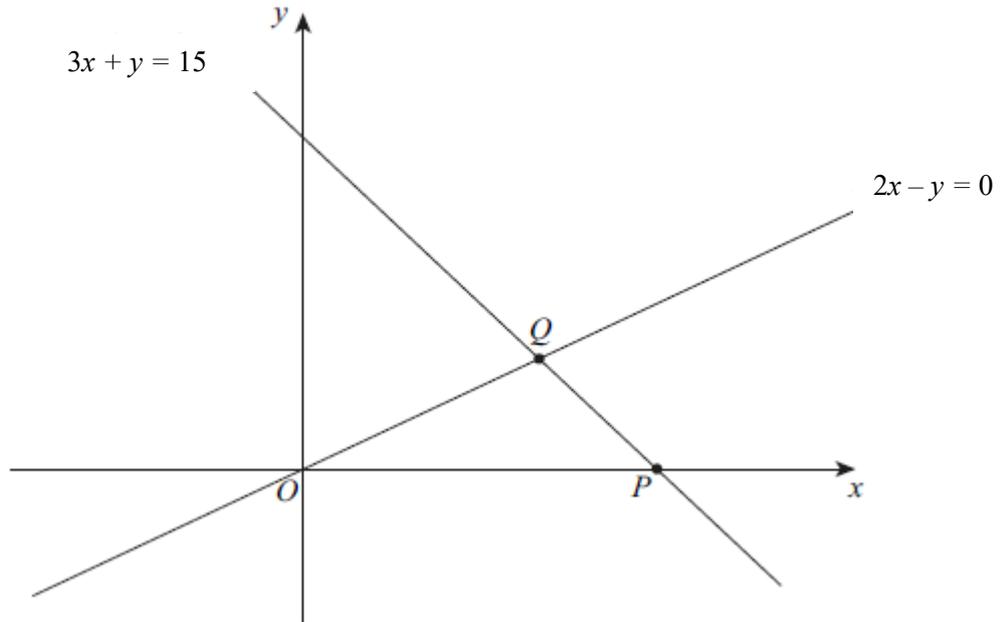
(c) I chose a number at random, given that it is a square number, find the probability that it is even.

Answer _____

(2)

(Total 6 marks)

10) The sketch graphs of two straight lines are shown.



(a) Work out the coordinates of P .

Answer (_____ , _____)

(1)

(b) Work out the coordinates of Q .

Answer (_____ , _____)

(3)

(c) Use your answers to parts (a) and (b) to work out the area of triangle OPQ .

(2)

(Total 6 marks)

11) A bag contains 12 discs.

7 are red
3 are blue
2 are yellow.

Two discs are taken from the bag at random, without replacement.

Work out the probability that the two discs are the same colour.

(Total 4 marks)

12) A bag contains red, blue, green and yellow counters. The probability of choosing a green or yellow counter is shown in the table below.

red	blue	green	yellow
		0.5	0.2

There are twice as many blue counters as red counters.

Calculate the probability of choosing a blue or yellow counter.

(Total 4 marks)

- 13a) Brian knows his 4 digit numerical alarm code is even and starts with a 1.
How many possible codes are there?

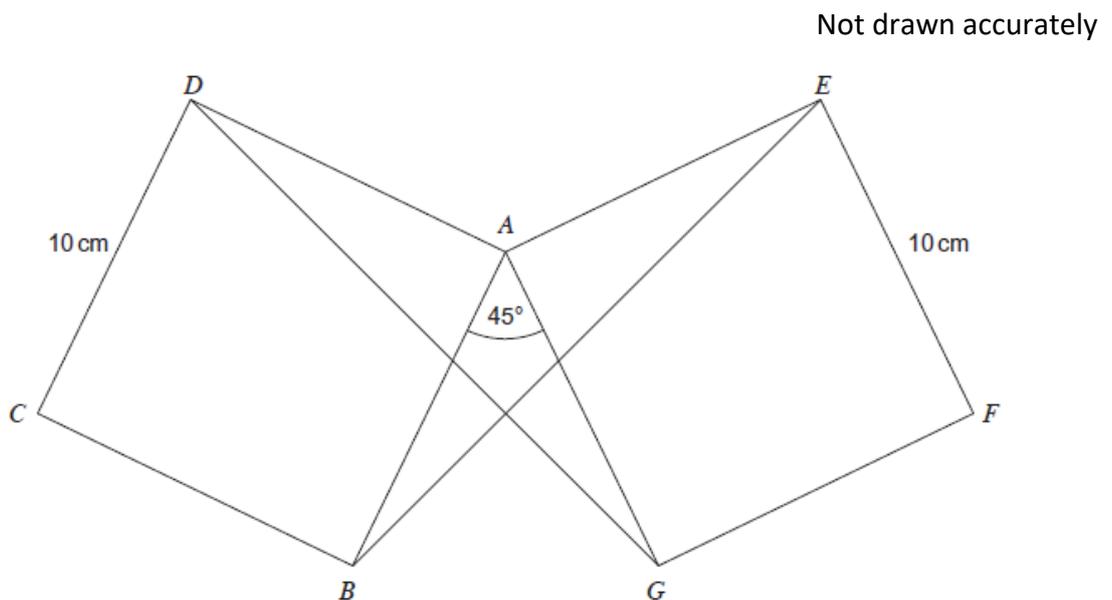
(2)

- b) One of these codes is chosen at random, find the probability it contains a 3.

(2)

(Total 4 marks)

- 14) $ABCD$ and $A EFG$ are identical squares.
 $CD = EF = 10$ cm
Angle $BAG = 45^\circ$



Prove that triangles AGD and ABE are congruent.

(Total 4 marks)

END OF QUESTION PAPER

