Name: _____

Maths Genie Stage 9

Test C

Instructions

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
- **Calculators may not be used.**

Information

- The marks for each question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

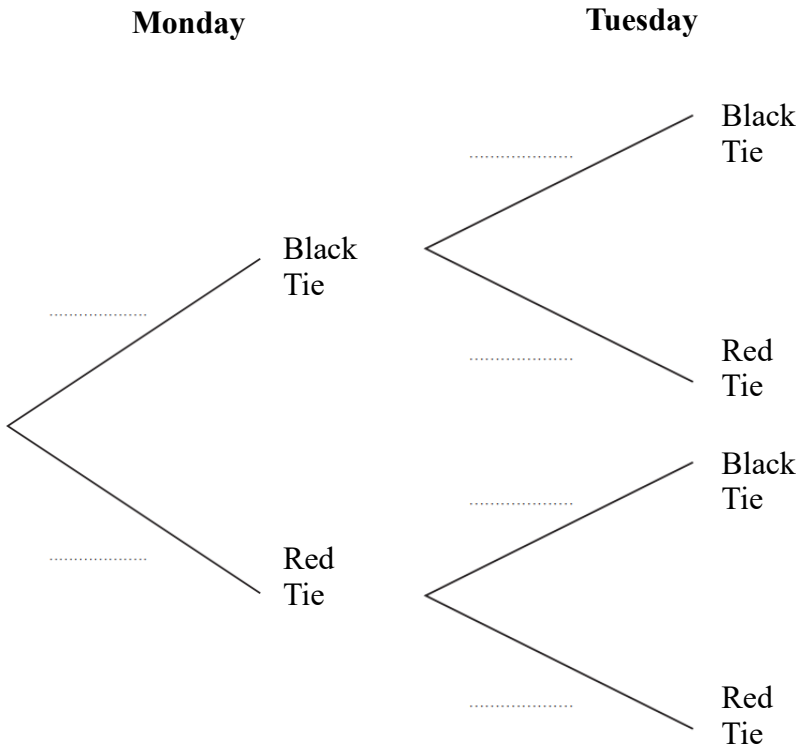
Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end

1 Each day Paul wears either a black tie or a red tie to work.

On any day the probability he wears a black tie is $\frac{3}{8}$

(a) Complete the probability tree diagram for Monday and Tuesday.



(2)

(b) Work out the probability Paul wears different coloured ties on Monday and Tuesday .

.....

(2)

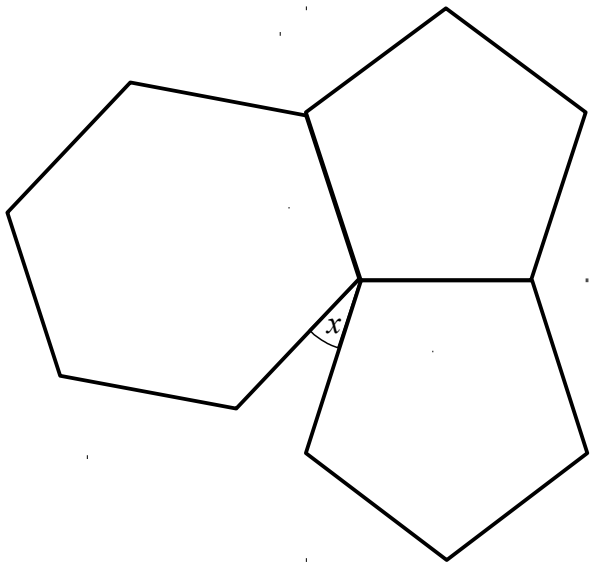
(Total for Question 1 is 4 marks)

2 A line passes through the point (0, -7).
The gradient of this line is 2.
Write down the equation of this line.

.....

(Total for Question 2 is 2 marks)

3



The diagram shows two regular pentagons and a regular hexagon meeting at a point.

Work out the size of the angle marked x.
You must show all your working.

….....…°

(Total for Question 3 is 3 marks)

4 Make b the subject of $a = \sqrt{\frac{b-7}{2}}$

……

(Total for Question 4 is 3 marks)

5 A is the point (7, –5) and B is the point (4, –1).

(a) Write down as a column vector $\overrightarrow{AB}$

……

(1)

C is the point (2, 5) and D is the point (–1, 9).

(b) Write down as a column vector $\overrightarrow{CD}$

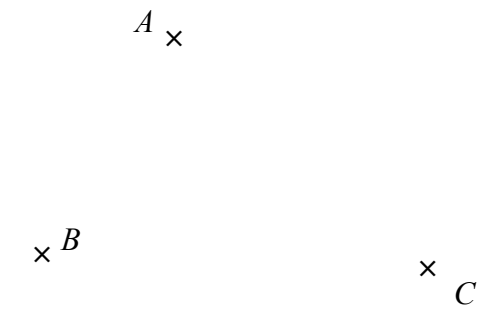
……

(1)

(Total for Question 5 is 2 marks)

6 A, B and C are three points on a map.

1cm represents 100 metres.



Point P is 250 metres from A.
Point P is equidistant from B and C.

On the map, show the possible positions of P.

(Total for Question 6 is 3 marks)

---

7 The bearing of Frankfurt from Paris is 073°

Find the bearing of Paris from Frankfurt.

.....°

(Total for Question 7 is 2 marks)

8 The line AB passes through the points A(3, -2) and (6, k).

The gradient of AB is 4.

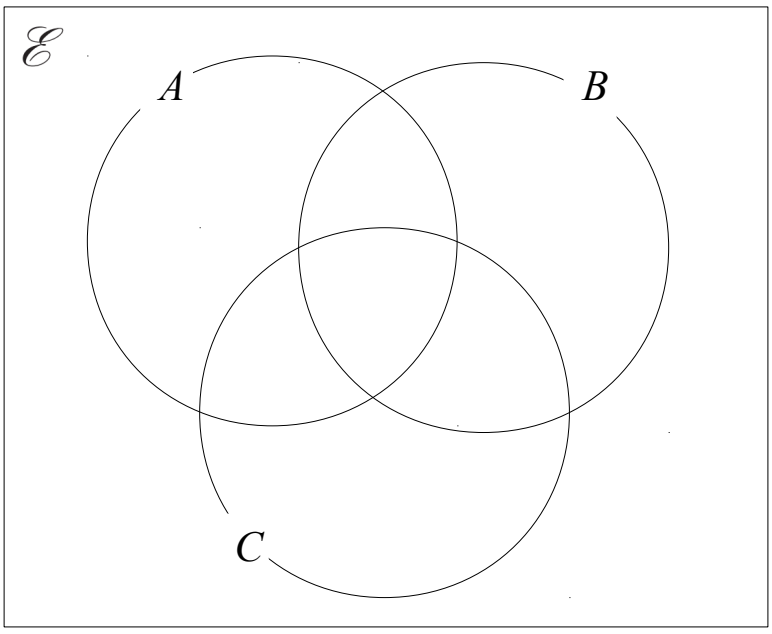
Work out the value of k.

k = ...

(Total for Question 8 is 3 marks)

9 $\mathscr{E}$ = {odd numbers less than 30}
A = {3, 5, 17, 21, 25, 27}
B = {1, 5, 9, 15, 25}
C = {5, 11, 13, 15, 21, 29}

(a) Complete the Venn diagram to represent this information.



A number is chosen at random from $\mathscr{E}$.

(b) Find the probability that the number is a member of $(A \cap B)$.

….....….....

(Total for Question 9 is 3 marks)