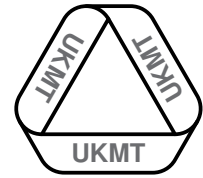
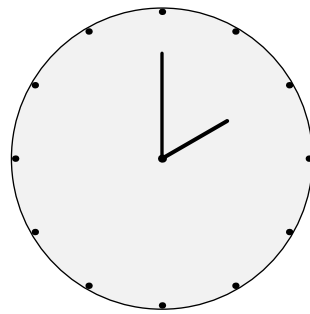


Instructions

- Your team will have 45 minutes to answer 10 questions. Each team will have the same questions.
- Each question is worth a total of 6 marks. However, some questions are easier than others!
- Do not spend too long on any one question without sharing it with the rest of the team.
- You will have to decide your team's strategy for this group competition.
- There is only one response sheet per team.
- Don't forget to finalise your answers and write them on the response sheet before the end of the round.

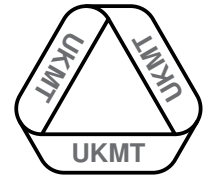


QUESTION 1



Starting at the time shown on the twelve-hour clock, how many times over a twelve-hour period is the angle between the minute hand and the hour hand equal to 90° ?

[6 marks]



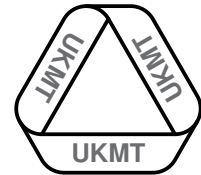
QUESTION 2

- (a) In a particular kite, the smallest angle is a quarter of the angle opposite to it. The angle between a long side and a short side of the kite is 115° . What is the smallest angle in this kite?

[3 marks]

- (b) In another kite, the smallest angle is also a quarter of the angle opposite to it. The angle between a long side and a short side of this kite is five times its smallest angle. What is the smallest angle in this kite?

[3 marks]



QUESTION 3

(a) Find the value of

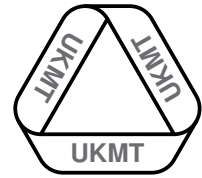
$$\frac{1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8}{1 + 2 - 3 + 4 - 5 + 6 + 7 + 8}.$$

[3 marks]

(b) Find the value of

$$2^5 + 2^6 + 2^7 + 2^8 + 2^9 + 2^{10}.$$

[3 marks]



QUESTION 4

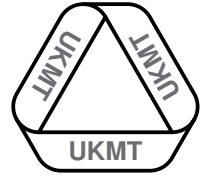
square
rectangle
rhombus
kite
parallelogram
trapezium

Write down the names of some of the quadrilaterals listed above so that, between them, they contain the vowels

a, e, i, o and u

at least once each and have, in total, the minimum possible number of letters.

[6 marks]



QUESTION 5

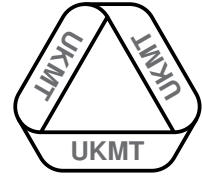
In a competition, teams A , B and C play against each other once only.

Team A beats both teams B and C whilst team B draws with team C .

In total, team A scores 11 goals, team B scores no goals and team C scores 3 goals.

How many different sets of scores are possible?

[6 marks]



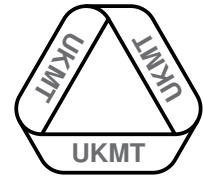
QUESTION 6

A sum of money is shared equally between five people.

Sunita, Lauren and Maisie each spend half of their share. Florence spends one third of her share. Thomas spends a quarter of his share. There is then £700 left out of the original sum of money.

How much money did each of the five people receive as their share at the start?

[6 marks]

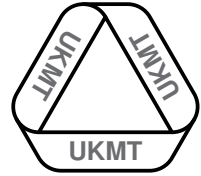


QUESTION 7

All of the odd integers from 1 to 999 inclusive are added up.

What is the total?

[6 marks]

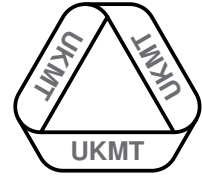


QUESTION 8

Charlie is leading in a race. He is 81 metres in front of Sam who is in last place. Jon is between Charlie and Sam. Jon is 40 metres from the finish line and is twice as far away from Sam as he is from Charlie.

How far has Sam left to run?

[6 marks]



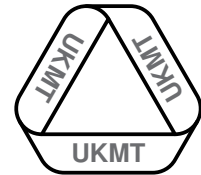
QUESTION 9

The digits of three consecutive two-digit integers greater than 20 have a sum of 27. Two of these integers are prime numbers.

(a) Find a set of three consecutive integers with these properties.
[3 marks]

(b) Find another set of three consecutive integers with these properties.
[3 marks]

Write down your sets of integers in ascending order.




QUESTION 10

When a 1 is placed after a five-digit integer the result is three times as large as when a 1 is placed before it.

What is the five-digit integer?

[6 marks]

TEAM NUMBER 

SCHOOL NAME 

1. Number of times

0 6

6. Amount of each share

pounds 0 6

2. (a) Smallest angle (b) Smallest angle

(a) 0 3

(b) 0 3

degrees

0 6

7. Total of integers

3. (a) Value (b) Value

(a) 0 3

(b) 0 3

8. Distance left to run

metres 0 6

4. Names of quadrilaterals

0 6

9. (a) Three consecutive numbers (b) Three consecutive numbers

(a) 0 3

(b) 0 3

5. Number of sets of scores

0 6

10. Five-digit integer

0 6

Circle the mark awarded for each question and cross out the others.

FINAL SCORE /60 