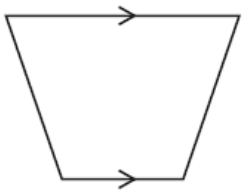
GCSE Mathematics - Paper 1 (Foundation tier)

J560/01 Paper 1 Mathematics (Foundation tier)

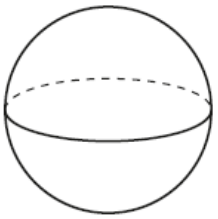
Question Set 4

1 (a) Write down the mathematical name of this quadrilateral.



(a) trapezium [1]

(b) Write down the mathematical name of this solid.



(b) Sphere [1]

2 Simplify.

(a) $4a + 5a - 7a$

$4a + 5a = 9a$

$9a - 7a = 2a$

(a) $2a$ [1]

(b) $3g - 2f + 8g + 5f$

$3g + 8g = 11g$ → $11g + 3f$

$5f - 2f = 3f$

(b) $11g + 3f$ [2]

3 Factorise fully.

(a) $6 + 9y$ HCF = 3

$3(2+3y)$

(a) $3(2+3y)$ [1]

(b) $2x^2 + 6x$ HCF = $2x$

$2x(x+3)$

(b) $2x(x+3)$ [2]

4 Plaza United are playing a football match away from home.

(a) 379 supporters are going to the match by coach.
Each coach seats 45 people.

What is the smallest number of coaches that will be needed?

$\frac{379}{45} = 8.42222\ldots$

so 9 coaches needed

(a) 9 [2]

(b) In their last 50 matches, Plaza United have drawn 10 matches, lost 5 and won the rest.

Sam claims

The probability that Plaza United will win this match is 0.7.

(i) Show calculations to support Sam's claim. [2]

Drawn = 10 lost = 5 won = $50 - (10+5) = 35$

$\frac{35}{50} = \frac{7}{10} = 0.7$

(ii) Give one reason why Sam's claim may not be reliable.

Only takes into account last 50 matches.

[1]

5 Harry has a job.
On Friday, he is paid £8.50 per hour.
On Saturday, he is paid $1\frac{1}{2}$ times that rate.

He works for 4 hours on Friday.
He works from 8 am until 1 pm on Saturday.

How much does Harry earn in total for these two days?

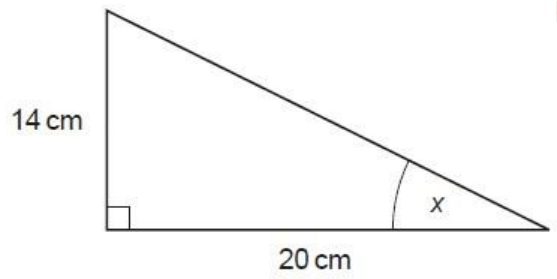
Friday → $(8.50 \times 4) = £34$

Saturday → $(1.5 \times 8.50 \times 5) = £63.75$

$34 + 63.75 = £97.75$

£ 97.75 [6]

6 Here is a right-angled triangle.



Not to scale

$\tan x = 14/20$

$x = 34.9920202$

$= 35°$

Show that angle x is 35°, correct to the nearest degree. [3]

7 Andrea is 165 cm tall, correct to the nearest cm.
Joel is 170 cm tall, correct to the nearest 10 cm.

Show that Andrea could be taller than Joel. [3]

Andrea → upper bound = 165.5 cm
lower bound = 164.5 cm

Joel → upper bound = 175 cm
lower bound = 165 cm

So if Joel is lb = 165cm and Andrea is ub = 165.5cm
Andrea can be 0.5 cm taller.

8 Carol makes birthday cards.
Each card takes the same amount of time to make.

She makes 3 cards in 48 minutes.
She has an order for 80 cards.

Can she complete this order in 3 days if she works 8 hours each day?
Show how you decide.

$\frac{48}{3}$ = 16 minutes per card.

80 cards × 16 minutes = 1280 minutes = $\frac{1280}{60}$ hours

= 21.3 hours

She works 3 × 8 hours = 24 hours

So she can 24 − 21.3 = 8/3 hours extra

Yes because she will work for longer than how long it will take to complete cards. [5]

9 The table below shows the area, in square kilometres (km^2), of some countries.

Country	Area (km^2)
Australia	7.69×10^6
Latvia	6.46×10^4
Luxembourg	2.59×10^3
Russia	1.71×10^7
Singapore	7.24×10^2
Sweden	4.50×10^5

(a) Write the area of Sweden as an ordinary number.

$4.5 \times 10^5 = 450000$

(a) 450000 km^2 **[1]**

(b) Which of the above countries has the smallest area?

(b) Singapore **[1]**

(c) Alexis says

The area of Australia is approximately three times larger than the area of Luxembourg.

Is she correct?
Show how you decide.

$\frac{7.69 \times 10^6}{2.59 \times 10^3} = 2969.11968$

$2969.11968 > 3$

Alexis is wrong because Australia is much bigger by about 3000. 3 is much lower **[2]**

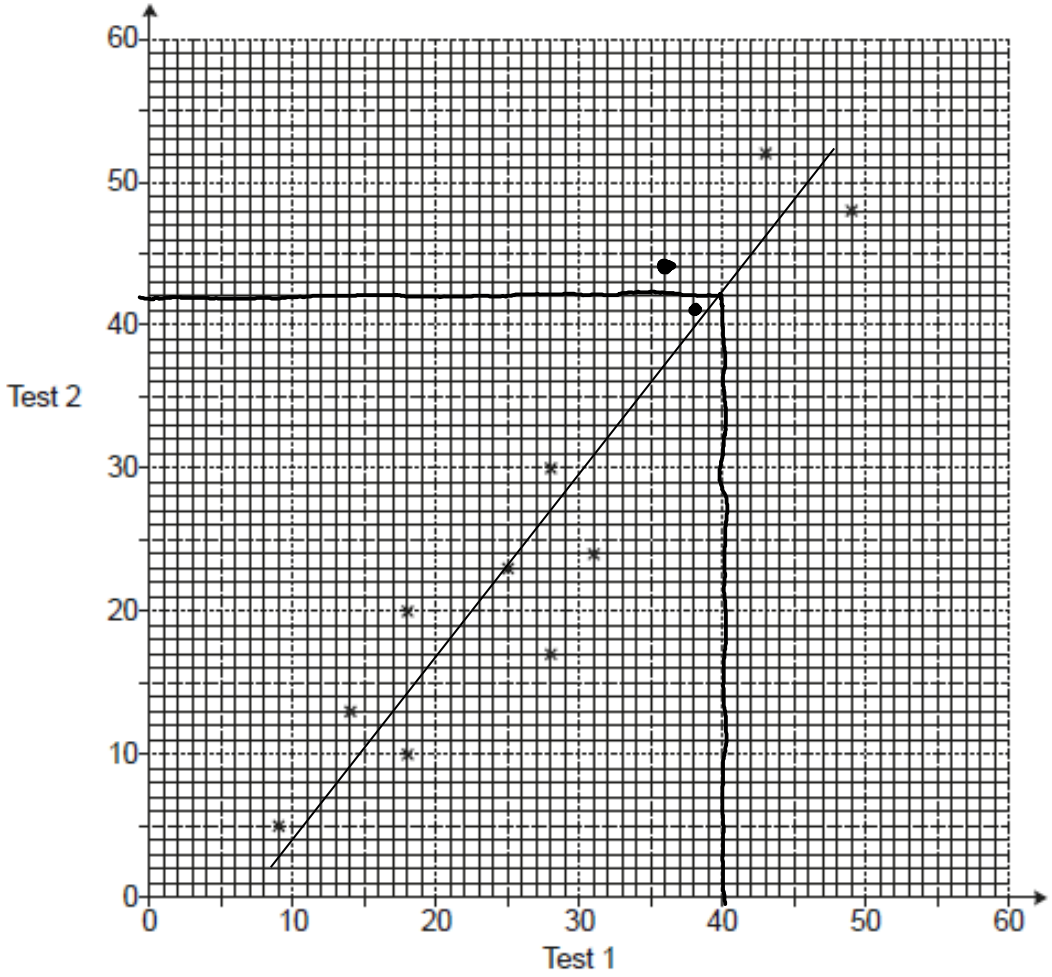
(d) Work out the total area of Russia and Australia.
Give your answer in standard form, correct to 2 significant figures.

$(1.71 \times 10^7) + (7.69 \times 10^6) = 24790000$

$2.479 \times 10^7 = 2.48 \times 10^7$

(d) 2.48×10^7 km^2 **[4]**

10 12 students take two tests.
Each test is out of 60.
The scatter diagram shows the results for 10 of the students.



(a) The table shows the results for the other 2 students.

Test 1	36	38
Test 2	44	41

Plot these results on the scatter diagram. **[1]**

(b) Describe the type of correlation shown in the scatter diagram.

(b) Positive correlation **[1]**

(c) (I) Draw a line of best fit on the scatter diagram. [1]

(ii) Another student was absent for Test 2.
The student scored 40 marks on Test 1.

Use your line of best fit to estimate the result for this student on Test 2.

(c)(Ii) 42 [1]

(d) Work out the percentage of the 12 students whose result on Test 1 is lower than their result on Test 2.

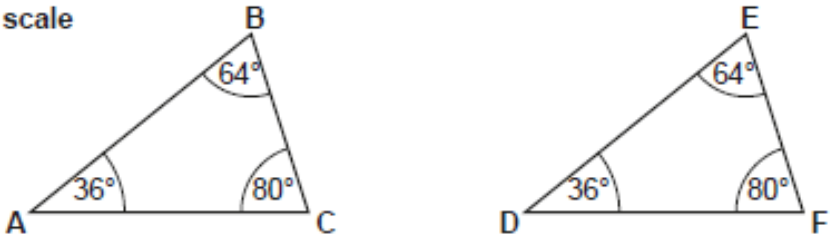
$\frac{5}{12} \times 100 = 41.6\dot{6}$

(d) 41.6̇ % [4]

11

(a) Are these two triangles definitely congruent?
Give a reason.

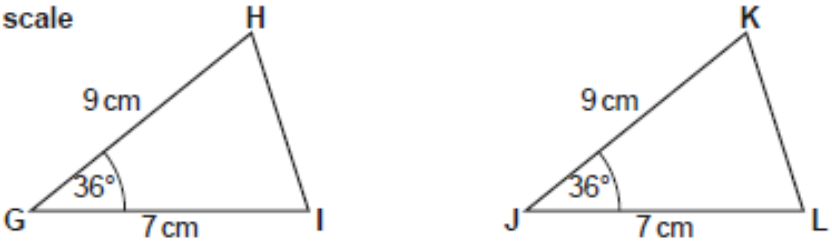
Not to scale



NO because congruent means same size and shape - we know same shape but as diagram not to scale we cant be sure about the size being the same. [1]

(b) Prove that these two triangles are congruent.

Not to scale



follows SAS rule Side Angle Side.

We know $\overline{IG} = \overline{LJ}$ and $\overline{GH} = \overline{JK}$ and angle in between both = 36°

so definitely congruent. [3]

Total Marks for Question Set 4: 50