

Write your name here					
Surname			Other names		
Pearson Edexcel		Centre Number		Candidate Number	
Level 1/Level 2 GCSE (9 - 1)		<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>		<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	
<h1 style="margin: 0;">Mathematics A03</h1> <h2 style="margin: 0;">Mathematical problem solving</h2> <h2 style="margin: 0;">Silver Test</h2>				 Grades 5-6	
Time: 45-60 minutes				Paper Reference 1MA1	
You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.					Total Marks <div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto;"></div>

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- **Calculators must not be used in questions marked with an asterisk (*).**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out** with your **answer clearly identified** at the **end of your solution**.

*



Information

- This silver test is aimed at students targeting grades 5-6.
- This test has 8 questions. The total mark for this paper is 33.
- 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. Axel and Lethna are driving along a motorway.

They see a road sign.
The road sign shows the distance to Junction 8
It also shows the average time drivers take to get to Junction 8

To Junction 8 30 miles 26 minutes

The speed limit on the motorway is 70 miles per hour.

(a) If Axel and Lethna can drive 30 miles in 26 minutes, work out how far they can travel in 60 minutes.

..... miles
(2)

Lethna says

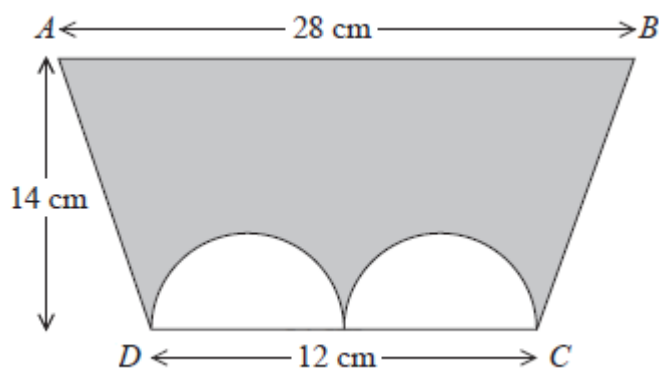
“We will have to drive faster than the speed limit to drive 30 miles in 26 minutes.”

(b) Is Lethna right?
You must show how you get your answer.

.....
(1)

(Total for Question 1 is 3 marks)

2. The diagram shows a trapezium $ABCD$ and two identical semicircles.



The centre of each semicircle is on DC .

- (a) Work out the area of the trapezium $ABCD$.

..... cm^2
(1)

- (b) Find the length of the radius of one of the semi-circles.

..... cm
(1)

- (c) Work out the area of the one of the semi-circles shown.

Give your answer correct to 3 significant figures.

..... cm^2
(1)

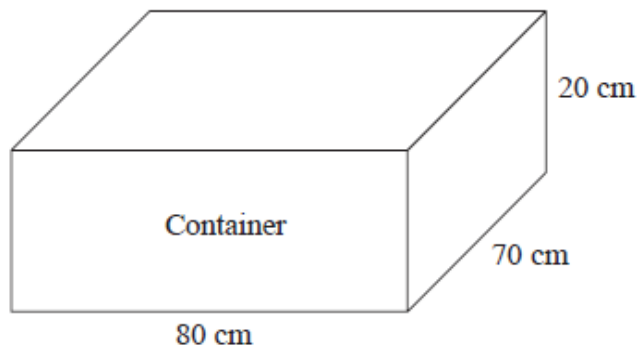
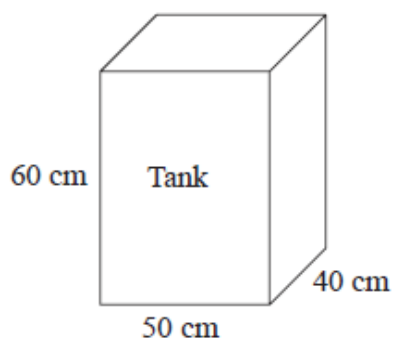
- (d) Thus work out the area of the shaded region.

Give your answer correct to 3 significant figures.

..... cm^2
(1)

(Total for Question 2 is 4 marks)

3. The diagram shows a tank in the shape of a cuboid.
It also shows a container in the shape of a cuboid.



The tank is full of oil.
The container is empty

35% of the oil from the tank is spilled.
The rest of the oil from the tank is put into the container.

- (a) Work out the volume of the tank.

..... cm^3
(1)

- (b) Thus work out the volume of the oil put into the container.

..... cm^3
(1)

- (c) Work out the surface area of the floor of the container.

..... cm^2
(1)

- (d) Thus work out the height of the oil in the container. Give your answer to one decimal place.

.....cm
(2)

(Total for Question 3 is 5 marks)

***4.** In a company, the ratio of the number of men to the number of women is 3 : 2

40% of the men are under the age of 25
10% of the women are under the age of 25

(a) Work out what fraction of the company are men.

.....

(b) Thus work out what percentage of men under the age of 25 there are in the company.

.....
(1)

(c) Work out what fraction the company are women.

.....

(d) Thus work out what percentage of women under the age of 25 there are in the company.

.....
(1)

(e) What percentage of all the people in the company are under the age of 25?

.....%
(2)

(Total for Question 4 is 4 marks)

5. Katy invests £2000 in a savings account for 3 years.

The account pays compound interest at an annual rate of

2.5% for the first year

x % for the second year

x % for the third year

There is a total amount of £2124.46 in the savings account at the end of 3 years.

- (a) Work out the amount in the savings account at the end of the first year.

£.....
(1)

- (b) Write down an equation in x to show increase in the amount in the savings account after three years compared to the amount in the savings account after two years.

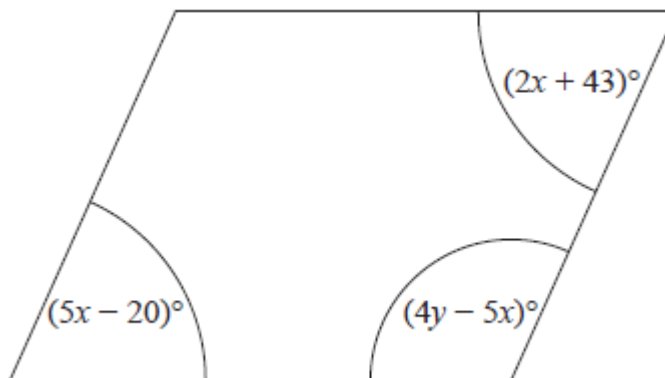
.....
(1)

- (c) Solve your equation for x and thus work out the rate of interest in the second year.

.....%
(2)

(Total for Question 5 is 4 marks)

- *6. Here is a parallelogram.



- (a) Use your knowledge of parallelograms to identify two equal angles.

..... and
(1)

- (b) Use your answer to part (a) to form and solve an equation to find the value of x .

$x =$
(2)

- (c) Use your knowledge of parallelograms to identify two angles which add up to 180° .

- (d) Use your answer to part (c) to form an equation, substituting your value for x found in part (b).

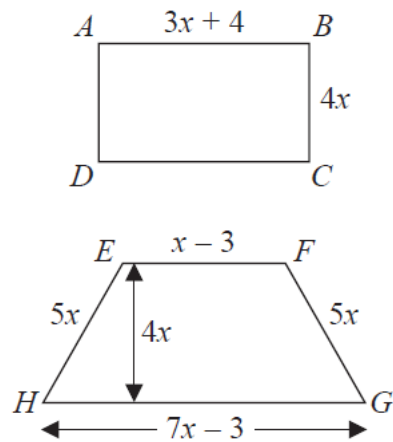
..... =
(1)

- (e) Rearrange and solve your equation from part (d) to find the value of y .

$y =$
(1)

(Total for Question 6 is 5 marks)

7. $ABCD$ is a rectangle.
 $EFGH$ is a trapezium.



All measurements are in centimetres.
The perimeters of these two shapes are the same.

- (a) Find algebraic expressions for the perimeter of the rectangle and the perimeter of the trapezium.

.....
(1)

.....
(1)

- (b) Form and solve an equation from the expressions to find a value for x .

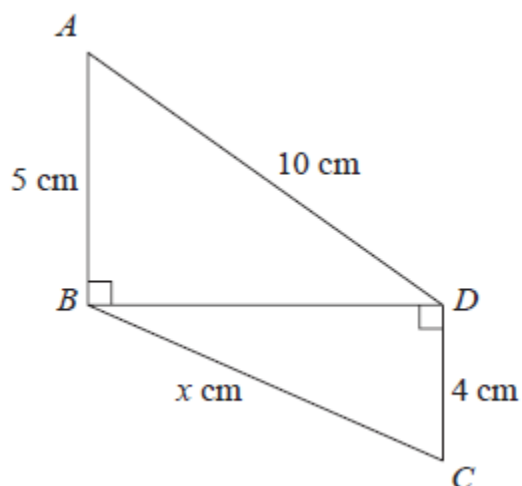
$x =$
(1)

- (c) Substitute your value of x to work out the area of the rectangle.

..... cm^2
(2)

(Total for Question 7 is 5 marks)

8. Triangles ABD and BCD are right-angled triangles.



- (a) Work out the distance BD .

$$BD = \dots\dots\dots (1)$$

- (b) Thus work out the value of x .
Give your answer correct to 2 decimal places.

$$x = \dots\dots\dots (3)$$

(Total for Question 8 is 4 marks)

TOTAL FOR PAPER IS 33 MARKS

Mathematical problem solving: Silver Test Grades 5-6			
Question	Working	Answer	Notes
1 (a)		conclusion (supported)	P1 $30 \div 70 (= 0.428)$
			$26 \div 60 (= .4333...)$
			$30 \div 26 (= 1.153...)$
(b)			P1 $60 \times "0.428..."$
			$70 \times "0.4333..."$
			$60 \times "1.153..."$
			C1 conclusion linked to 25.7 minutes, 30.3 miles or 69.2 mph
2 (a)		252	P1 Method to find area of trapezium
(b-c)			M1 For start to process e.g. radius = $12 \div 4 (= 3)$ or semicircle or circle
(d)			P1 Process to find area of the shaded region
(e)			A1 $251.7 - 252$
3 (a)		13.9	P1 finds the volume of a cuboid e.g. $50 \times 40 \times 60 (= 120000)$
(b)			P1 finds 35% of the oil from the cuboid e.g. 120000×0.35 oe (=42000)
(c)			P1 removes 35% of oil from cuboid e.g. $120000 - 42000 (= 78000)$
(d)			P1 division to find missing side length e.g. $78000 \div (80 \times 70)$ or 13.928...
			A1 for answer to an appropriate degree of accuracy e.g. (13.9 or 14 or 10)

Mathematical problem solving: Silver Test Grades 5-6				
Question	Working	Answer	Notes	
4 (a-b)		28	P1	Process to start to solve problem e.g. $\frac{3}{5} \times 40$ or divide any number in the ratio 3:2
(c-d)			P1	Second step in process to solve problem eg. $\frac{2}{5} \times 10$ or find number of males/females under 25 for candidate's chosen number
(e)			P1	for complete process
			A1	
5 (a)		1.8%	P1	for start to process e.g. $2000 \times 1.025 (= 2050)$
(b)			P1	for process to use all given information e.g. $"2050" \times m^2 = 2124.46$ or $"2050" \times \left(1 + \frac{x}{100}\right)^2 = 2124.46$
(c)			P1	for process to find their unknown, e.g. $m = \sqrt{\frac{2124.46}{2050}} (= 1.01799...)$
			A1	for 1.79% – 1.80%

Mathematical problem solving: Silver Test Grades 5-6				
Question	Working	Answer	Notes	
6 (a)		$x = 21, y = 50$	P1	process to start solving problem eg. form an appropriate equation
(b)			P1	complete process to isolate terms in x
(c-d)			A1	for $x = 21$
(e)			P1	complete process to find second variable
			A1	$y = 50$
7 (a)		203	P1	translate into algebra for rectangle: $4x + 4x + 3x + 4 + 3x + 4$ ($= 14x + 8$) or for trapezium: $5x + 5x + x - 3 + 7x - 3$ ($= 18x - 6$)
			P1	equating: e.g. $18x - 6 = 14x + 8$ ($4x = 14$)
(b)			A1	solving for x : $x = 14/4 = 3.5$ oe
(c)			P1	process to find area: “3.5” \times 3 + 4 (ft) or “3.5” \times 4 ft
			A1	cao
8 (a)		9.54	P1	$10^2 - 5^2$ ($= 75$)
			P1	“75” + 4^2 ($= 91$)
(b)			P1	$\sqrt{(10^2 - 5^2 + 4^2)}$
			P1	$9.53 - 9.54$

Mathematical problem solving: Silver Test Grades 5-6			
Question	Working	Answer	Notes