edexcel

GCSE Mathematics Practice Tests: Set 3

Paper 1H (Non-calculator)

Time: 1 hour 30 minutes

You should have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator.

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 may not be used.**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**



Information

- The total mark for this paper is 80
- 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.

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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. The equation of a straight line is $y = 4x + 7$

(*a*) Write down the gradient of the line.

.....

(1)

(*b*) Write down the *y*-intercept of the line.

.....

(1)

(Total 2 mark)

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2. Work out $3\frac{1}{8} - 1\frac{2}{3}$

.....

(Total 3 marks)

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3. Here are the ingredients needed to make **8** shortbread biscuits.

Shortbread biscuits
makes **8** biscuits
120 g butter
60 g caster sugar
180 g flour

Tariq is going to make some shortbread biscuits.
He has the following ingredients

330 g butter 200 g caster sugar 450 g flour

Work out the greatest number of shortbread biscuits that Tariq can make with his ingredients.
You must show all your working.

..... biscuits

(Total 3 marks)

4. Railtickets and Cheaptrains are two websites selling train tickets.

Each of the websites adds a credit card charge and a booking fee to the ticket price.

Railtickets	**Cheaptrains**
Credit card charge: 2.25% of ticket price	Credit card charge: 1.5% of ticket price
Booking fee: 80 pence	Booking fee: £1.90

Nadia wants to buy a train ticket.
The ticket price is £60 on each website.
Nadia will pay by credit card.

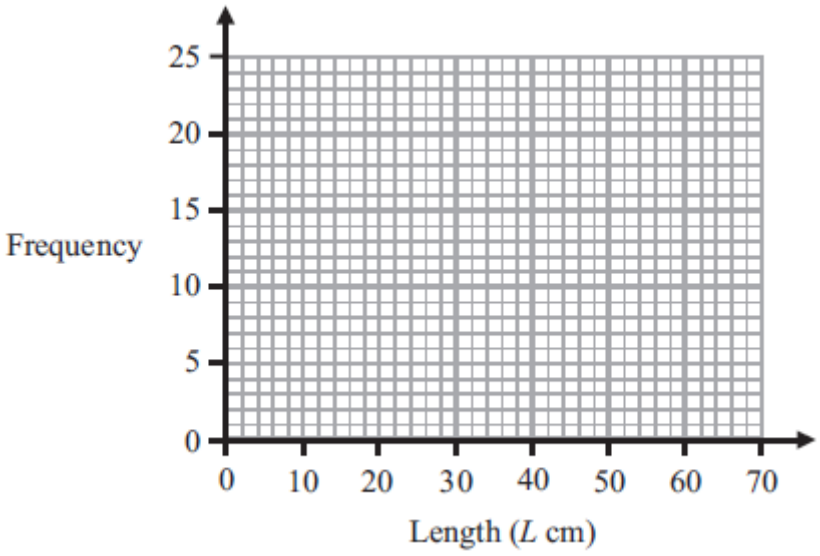
Will it be cheaper for Nadia to buy the train ticket from Railtickets or from Cheaptrains?

(Total 4 marks)

5. The table gives information about the lengths of the branches on a bush.

Length(Lcm)	**Frequency**
$0 \leq L < 10$	20
$10 \leq L < 20$	12
$20 \leq L < 30$	10
$30 \leq L < 40$	8
$40 \leq L < 50$	6
$50 \leq L < 60$	0

(*a*) Draw a frequency polygon to show this information.



(2)

(*b*) Work out the total number of branches on the bush.

.....

(2)

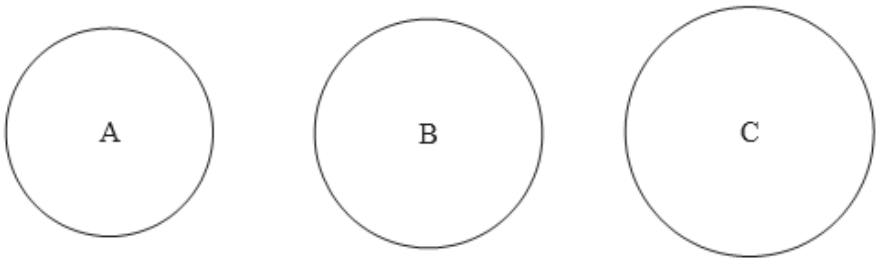
(*c*) Write down the modal class interval.

.....

(1)

(Total 5 marks)

6. Here are three circles A, B and C.



Diagrams **NOT** accurately drawn

The area of circle A is 200 cm^2.

The area of circle B is 10% larger than the area of circle A.

The area of circle C is 10% larger than the area of circle B.

How much larger is the area of circle C than the area of circle A?

(Total 4 marks)

7. (*a*) Expand and simplify $2(x + 3y) + 4(x – y)$

.....

(2)

(*b*) Factorise completely $8p – 12pq$

.....

(2)

(Total 4 marks)

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8. The diagram shows a triangle.

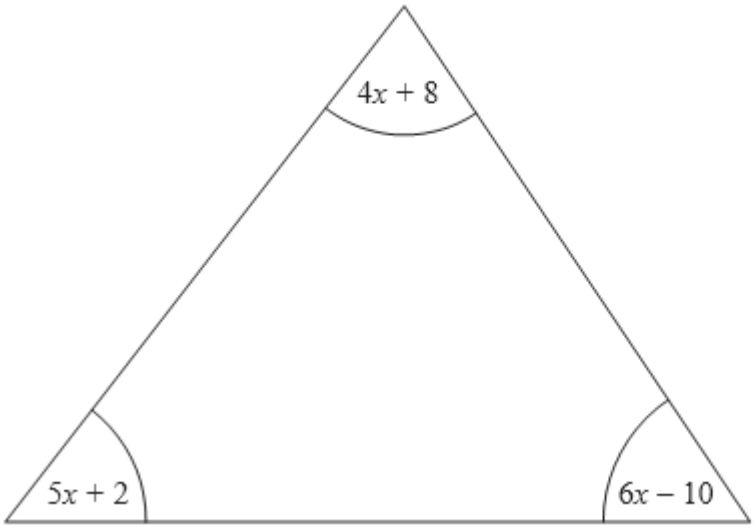

Diagram **NOT** accurately drawn

All the angles are measured in degrees.

Show that the triangle is isosceles.

(Total 5 marks)

9. (*a*) Find the Highest Common Factor (HCF) of 30 and 42.

.....

(2)

(*b*) Find the Lowest Common Multiple (LCM) of 30 and 45.

.....

(2)

(Total 4 marks)

10.

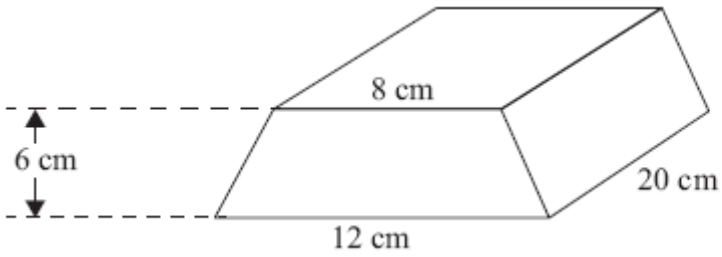

Diagram **NOT** accurately drawn

The diagram shows a solid prism made from metal.
The cross-section of the prism is a trapezium.

The parallel sides of the trapezium are 8 cm and 12 cm.
The height of the trapezium is 6 cm.
The length of the prism is 20 cm.

The density of the metal is 5 g/cm^3.

Calculate the mass of the prism.
Give your answer in kilograms.

..... kg

(Total 5 marks)

11. (*a*) Write down the value of 25^0

.....

(1)

(*b*) Write down the value of $49^{-\frac{1}{2}}$

.....

(1)

(*c*) Write as a power of 2 $\dfrac{4\times 8}{16^3}$

.....

(3)

(Total 5 marks)

---

12. There are 9 counters in a box.

4 of the counters are red.
2 of the counters are blue.
3 of the counters are yellow.

Pavinder takes at random two counters from the box.

Work out the probability that he takes at least one yellow counter.

.....

(Total 4 marks)

13. Simplify fully $\frac{2x^2 - 7x + 3}{x^2 - 9}$

.....

(Total 3 marks)

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14. Work out $(2 + \sqrt{3})(2 - \sqrt{3})$
Give your answer in its simplest form.

.....

(Total 2 marks)

15.

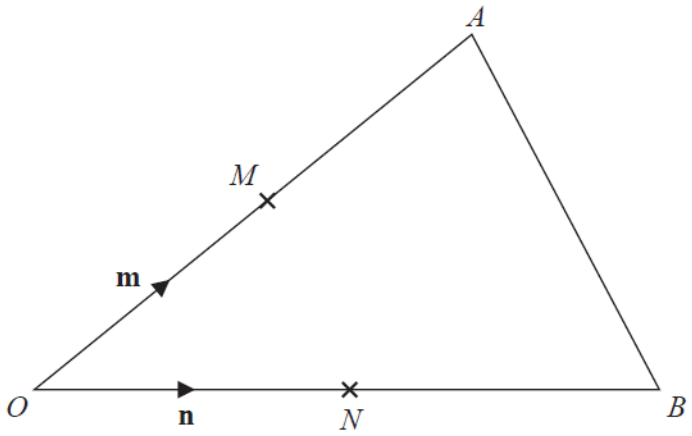


Diagram **NOT** accurately drawn

OAB is a triangle.
M is the midpoint of *OA*.
N is the midpoint of *OB*.

$\overrightarrow{OM}$ = **m**

$\overrightarrow{ON}$ = **n**

Show that *AB* is parallel to *MN*.

(Total 3 marks)

16.

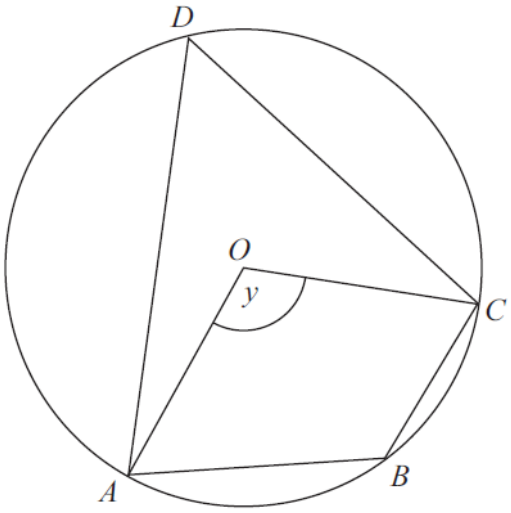


Diagram **NOT** accurately drawn

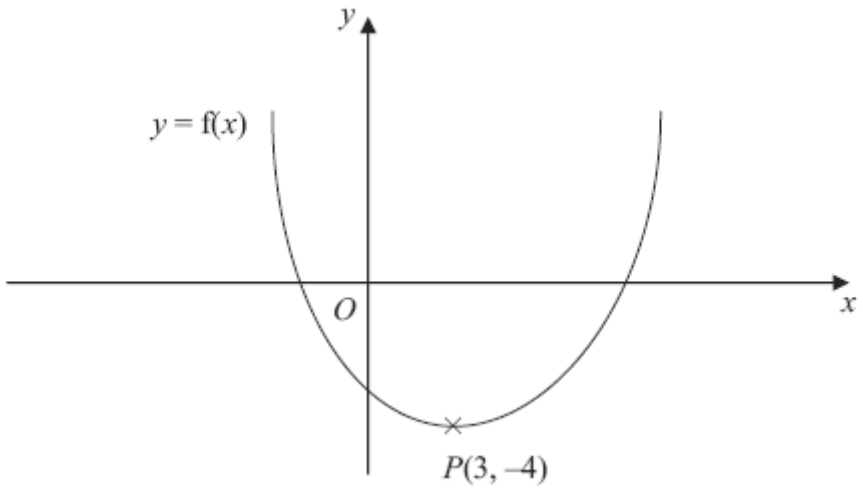
A, *B*, *C* and *D* are points on the circumference of a circle, centre *O*.

Angle *AOC* = *y*.

Find the size of angle *ABC* in terms of *y*.
Give a reason for each stage of your working.

(Total 4 marks)

17. This is a sketch of the curve with the equation $y = f(x)$.
The only minimum point of the curve is at $P(3, -4)$.



(*a*) Write down the coordinates of the minimum point of the curve with the equation $y = f(x - 2)$.

(..... , ...)

(2)

(*b*) Write down the coordinates of the minimum point of the curve with the equation $y = f(x + 5) + 6$

(..... , ...)

(2)

(Total 4 marks)

18.

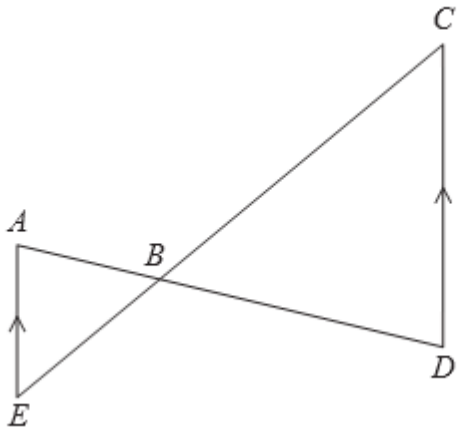


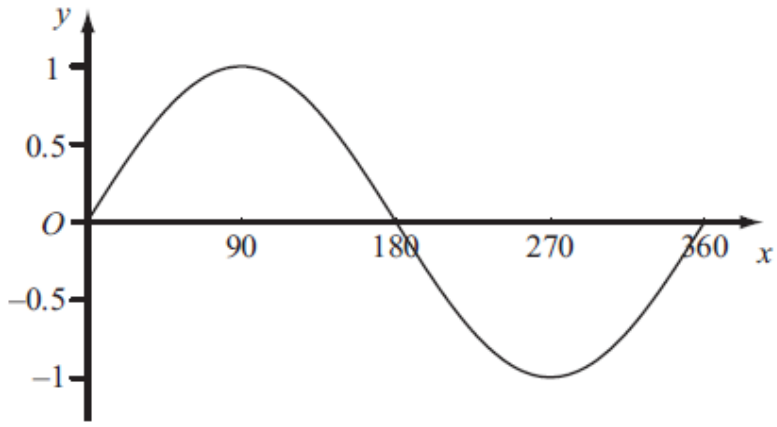
Diagram **NOT** accurately drawn

AE is parallel to *CD*.
ABD and *EBC* are straight lines.

Prove that triangle *ABE* is similar to triangle *DBC*.
Give reasons for each stage of your proof.

(Total 4 marks)

19. The diagram shows a sketch of the curve $y = \sin x°$ for $0 \leq x \leq 360$



The exact value of $\sin 60° = \frac{\sqrt{3}}{2}$

(*a*) Write down the exact value of

(i) $\sin 120°$,

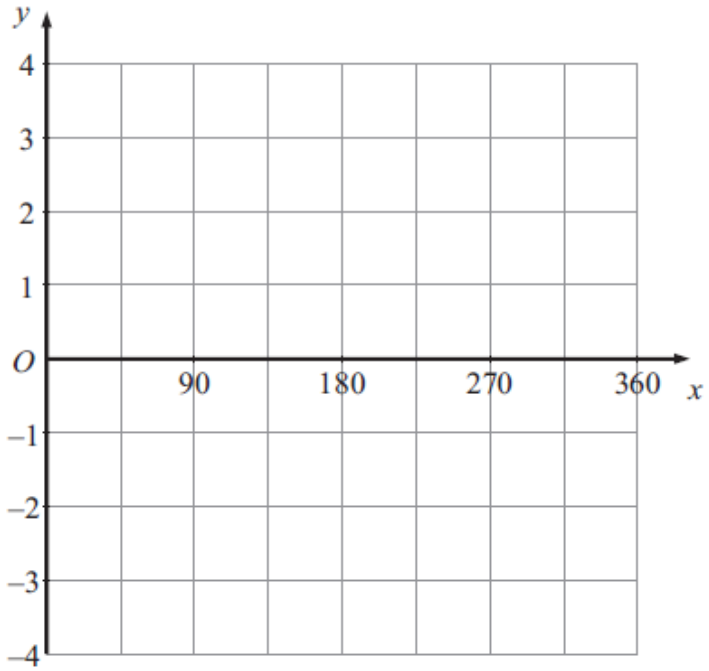
.....

(ii) $\sin 240°$.

.....

(2)

(*b*) On the grid below, sketch the graph of $y = \sin 2x°$ for $0 \leq x \leq 360$



(2)

(Total 4 marks)

20. Prove algebraically that the difference between the squares of any two consecutive integers is equal to the sum of these two integers.

(Total 4 marks)

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21 Sketch the graph of $f(x) = -x^2 - 3x + 5$, showing the coordinates of the turning point and the coordinates of any intercepts with the coordinate axes.

(Total 4 mark)

TOTAL FOR PAPER IS 80 MARKS