Paper Reference

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5544/15

Edexcel GCSE

2544 Mathematics B

Unit 4 (Terminal)

Paper 15 – Section B (Calculator)

Higher Tier

Practice Paper C

Time: 1 hour 10 minutes

Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Items included with question papers

Formulae sheet.

Instructions to Candidates

In the boxes above, write your Centre Number and Candidate Number, your surname, initial(s) and signature.

Check that you have the correct question paper.

Answer **ALL** the questions in the spaces provided in this question paper.

Supplementary answer sheets may be used.

Information for Candidates

The total mark for this paper is 60.

The marks for the various parts of questions are shown in round brackets, e.g.: (**2**).

This paper has 18 questions.

Calculators may be used.

Advice to Candidates

Work steadily through the paper.

Do not spend too long on one question.
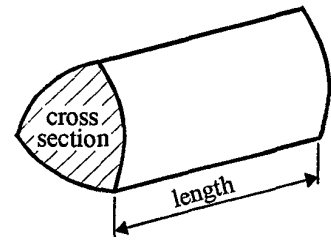
Show all stages in any calculations.

If you cannot answer a question, leave it and attempt the next one.

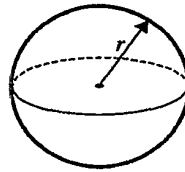Return at the end to those questions you have left out.

Formulae – Higher Tier
You must not write on this formula page.
Anything you write on this formulae page will gain NO credit.

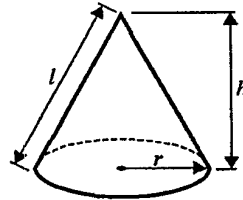**Volume of prism = area of cross-section × length**

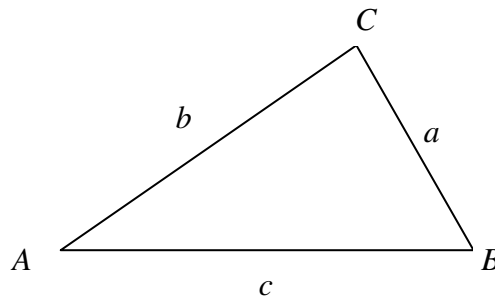**Volume of sphere =** $\dfrac{4}{3} \pi r^3$

Surface area of sphere = $4\pi r^2$

Volume of cone = $\dfrac{1}{3} \pi r^2 h$

Curved surface area of cone = $\pi r l$

In any triangle *ABC*

Sine Rule: $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

Cosine Rule: $a^2 = b^2 + c^2 - 2bc \cos A$

Area of a triangle = $\dfrac{1}{2} ab \sin C$

The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$, where $a \neq 0$, are given by $x = \dfrac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$

Answer ALL EIGHTEEN questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1. The cost of 1.5 kg of peaches is £0.84

   The total cost of 3 kg of peaches and 2 kg of apples is £2.34

   Work out the cost of 1 kg of apples

   ....

   (Total 3 marks)

2.   Ron went to Spain.

He changed £200 into Euros (€).
The exchange rate was £1 = €1.40

(a) How many Euros did he get?

€………………………

(2)

When he came home he changed €10.64 back into pounds.
The exchange rate was now £1 = €1.33

(b) How many pounds did he get?

£………………………

(2)

The value of the pound has decreased from €1.40 to €1.33

(c) Calculate the percentage decrease in the value of the pound.

………………………*%*

(3)
(Total 7 marks)

3.   The top of a table is a circle.
The radius of the top of the table is 50 cm.

(a)   Work out the area of the top of the table.

…………………………cm^2

(2)

The base of the table is a circle.
The diameter of the base of the table is 40 cm.

(b)   Work out the circumference of the base of the table.

……………………cm

(2)

(Total 4 marks)

4. The equation

$$x^3 + 4x^2 = 100$$

has a solution between 3 and 4
Use a trial and improvement method to find this solution.
Give your answer correct to one decimal place.
You must show **ALL** your working.

x = …………………...
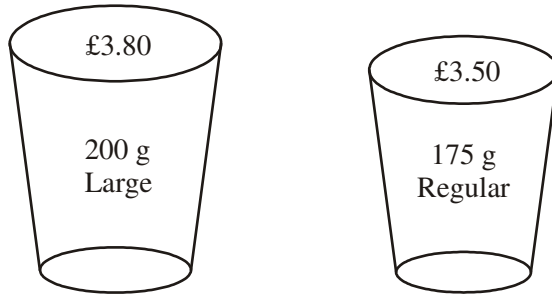**(Total 4 marks)**

5. The height of a hedge is now 80 cm.
The hedge grows 70 cm higher every year.
Write down a formula for the height, *h* cm, of the hedge *t* years from now.

……………………………
(Total 3 marks)

6.

A Large tub of popcorn costs £3.80 and holds 200 g.
A Regular tub of popcorn costs £3.50 and holds 175 g.

Rob says that the 200 g Large tub is the better value for money.
Linda says that the 175 g Regular tub is the better value for money.

Who is correct?

....

Explain the reasons for your answer. You must show all your working.

(Total 2 marks)

7. Use ruler and compasses to construct the perpendicular bisector of the line *PQ*.
You must show all your construction lines.

P ———————————————————— *Q*

(Total 2 marks)

8. This item appeared in a newspaper.

> **Cows produce 3% more milk**
>
> A farmer found that when his cow listened to
> classical music the milk it produced increased by 3%.
>
> This increase of 3% represented 0.72 litres of milk.

Calculate the amount of milk produced by the cow when it listened to classical music.

.... litres

(Total 3 marks)

9. Simplify

(i) $x^4 \times x^5$

....

(ii) $\dfrac{p^8}{p^3}$

....

(Total 2 marks)

10.

Diagram **NOT** accurately drawn

P

6 cm

Q 4 cm *R*
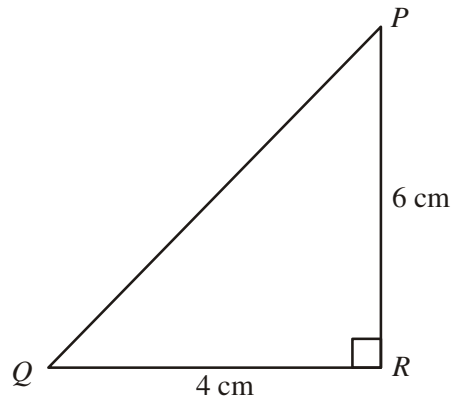
PQR is a right-angled triangle.

PR = 6 cm.
QR = 4 cm.

Work out the length of *PQ*.
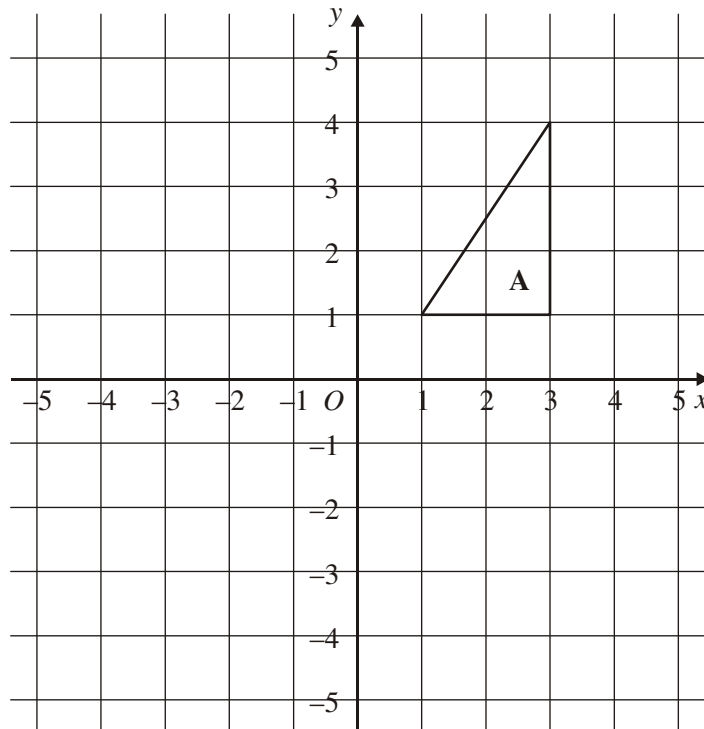Give your answer correct to 3 significant figures.

......................................cm
(Total 3 marks)

11. Barry buys 25 identical pens for £3.25

Work out the cost of 35 of these pens.
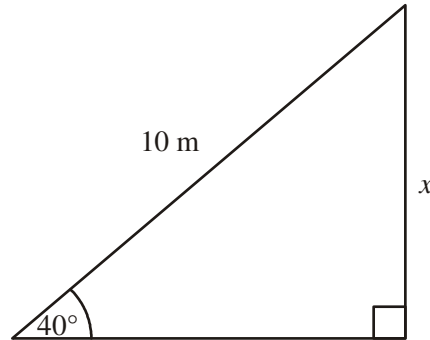
£……………………

(Total 2 marks)

12.

Triangle **A** is reflected in the *y* axis to give triangle **B**.
Triangle **B** is then reflected in the *x* axis to give triangle **C**.

Describe the **single** transformation that takes triangle **A** to triangle **C**.

....

(Total 3 marks)

13. Calculate the length of the side x in this right-angled triangle.
Give your answer correct to 3 significant figures.

Diagram **NOT** accurately drawn

.... cm
(Total 3 marks)

14. When you are *h* feet above sea level, you can see *d* miles to the horizon, where

$$d = \sqrt{\frac{3h}{2}}$$

(a) When you are 50 feet above sea level, how many miles can you see to the horizon?
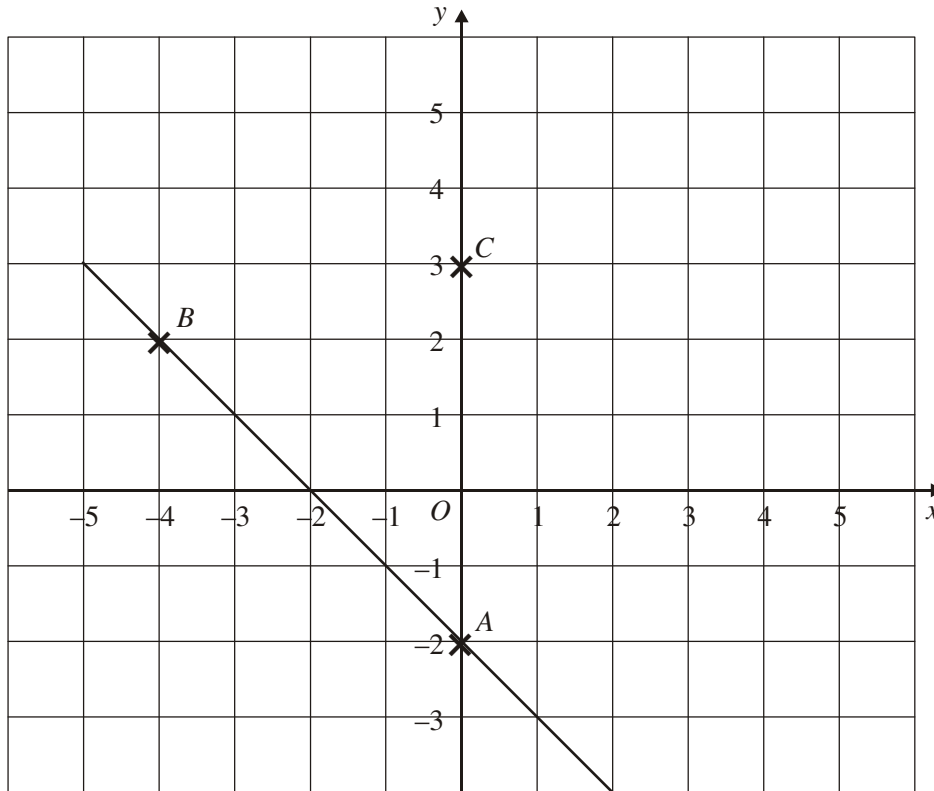Give your answer correct to 3 significant figures.

………………………….miles

(2)

(b) Make *h* the subject of the formula $d = \sqrt{\frac{3h}{2}}$

$h =$ ………………….

(2)

(Total 4 marks)

15.

In the diagram A is the point $(0, -2)$,
B is the point $(-4, 2)$,
C is the point $(0, 3)$.

Find an equation of the line that passes through C and is parallel to AB.

....
(Total 4 marks)

16. Simplify fully $(3x^2y^4)^3$

....

(Total 2 marks)

17. Solve the equation

$$\frac{x}{2x-3} + \frac{4}{x+1} = 1$$

$x =$ ....or $x =$ ....

(Total 5 marks)

18.

Diagram **NOT** accurately drawn
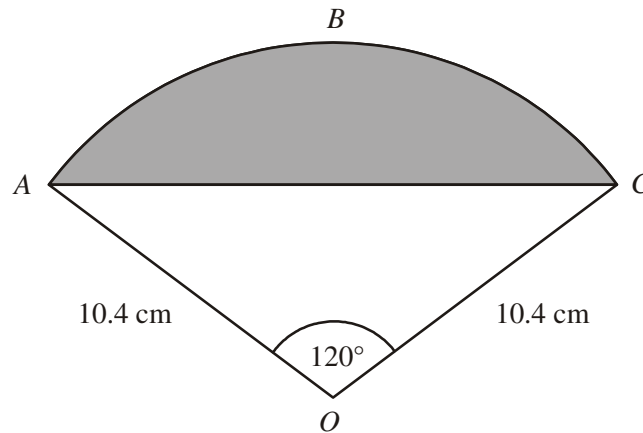
The diagram shows a sector *OABC* of a circle with centre *O*.
OA = *OC* = 10.4 cm.
Angle *AOC* = 120°.

Calculate the area of the shaded segment *ABC*.
Give your answer correct to 3 significant figures.

......................................cm²
(Total 4 marks)

TOTAL FOR PAPER: 60 MARKS
END

2544 Unit 4 Higher tier Practice Paper C (Section B – Calculator) Answers

1   33p or £0.33

2   (a) €280

    (b) £8

    (c) 5%

3   (a) 7850 cm^2

    (b) 126 cm

4   3.6

5   $h = 70t + 80$

6   Rob; 200÷3.8 = 52.6g/£ 175÷3.5 = 50g/£ or equivalent

7   Correct perpendicular bisector with construction arcs shown

8   24 litres

9   (i) x^9

    (ii) p^5

10   7.21 cm

11   £4.55

12   Rotation of 180° about (0, 0)

13   6.43 cm

14   (a) 8.66 miles

     (b) $h = \dfrac{2d^2}{3}$

15   $y = 3 - x$

16   $27x^6y^{12}$

17   1, 9

18   66.4 cm^2