Paper 2 and Paper 3 Predictions

Edexcel - Higher
High Chance

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You will need a calculator

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this test

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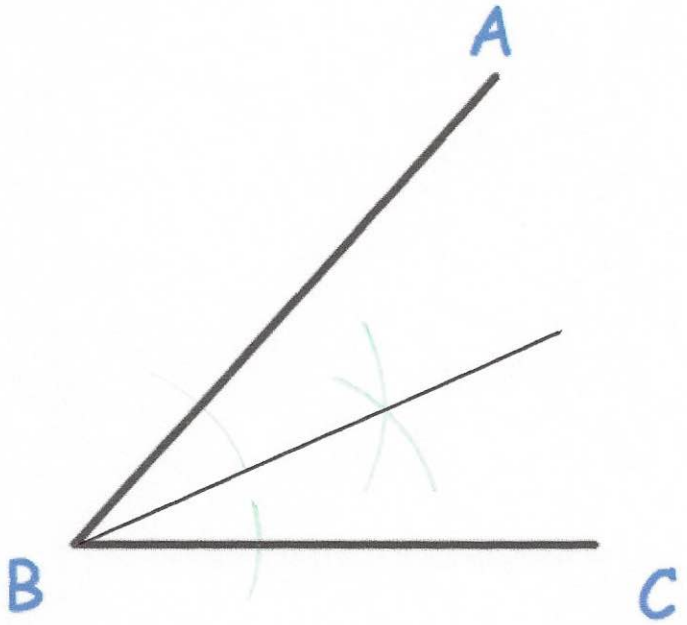
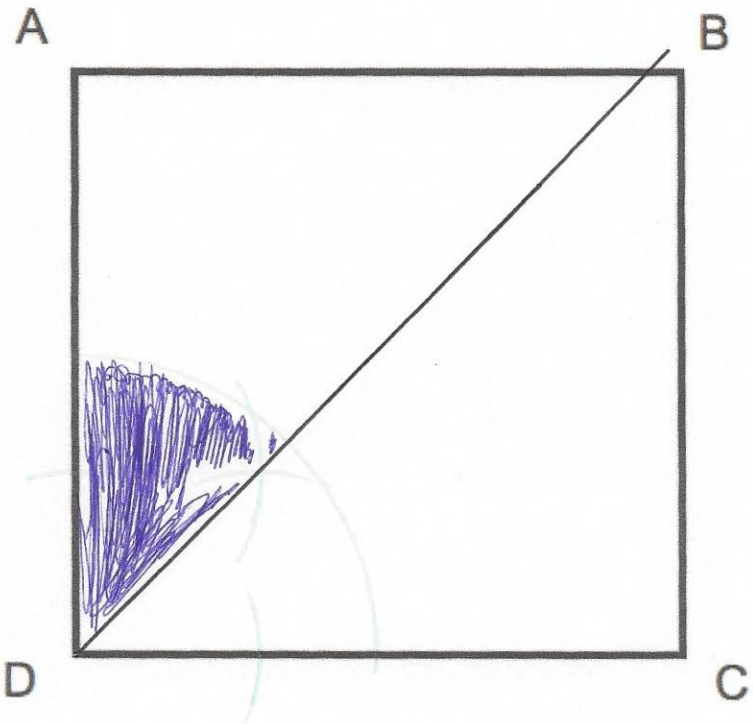
1. Using ruler and compasses, construct the bisector of angle ABC.



(2)

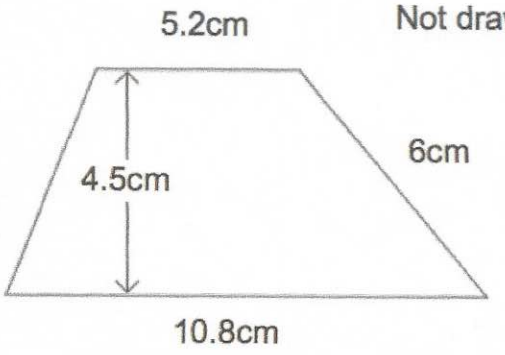
2. A and B are two points.



Shade the region inside the rectangle, which is closer to AD that DC, and less that 4cm from D.

(3)

3.



Calculate the area of the trapezium.

$\frac{1}{2}(a+b)h$

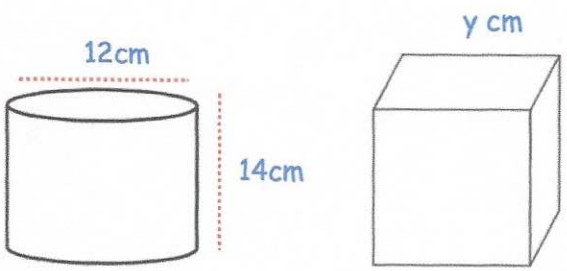
$\frac{1}{2}(5.2+10.8)\times 4.5$

36

.....cm²

(2)

4.



A cylinder has diameter 12cm and height 14cm.
A cube has side length y cm.
The cylinder and cube has the same volume.

Find y.

$V = \pi r^2 h$

$= \pi \times 6^2 \times 14 = 1583.36... \text{ cm}^3$

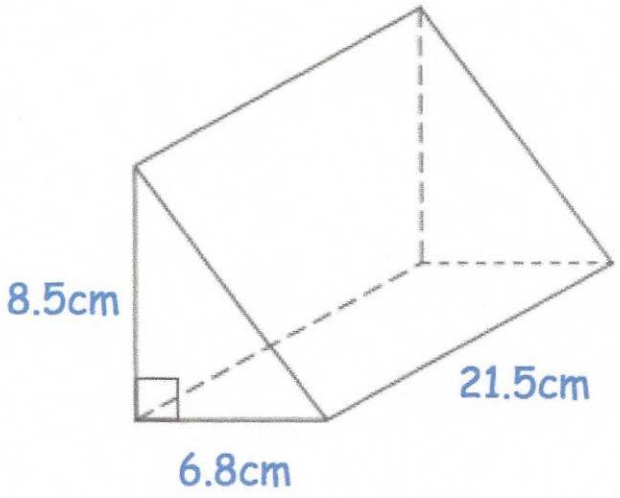
$y = \sqrt[3]{1583.36..} = 11.655..$

11.655..

..... cm

(4)

5. Shown below is a triangular prism.



Find the volume of the triangular prism.

$\frac{1}{2}(6.8 \times 8.5) = 28.9$

$28.9 \times 21.5 =$

621.35 .....cm³

(3)

6. Here are the lengths in millimetres of 15 earthworms.

43	19	35	28	21
28	28	18	24	33
31	36	12	41	28

(a) Complete an ordered stem and leaf diagram to show this information.

1|2 means 12

1	2 8 9
2	1 4 8 8 8 8
3	1 3 5 6
4	1 3

(3)

(b) How many earthworms are over 40 millilmetres?

2

(1)

(c) Write down the mode.

28

(1)

(d) What fraction of the earthworms are under 20 millimetres?

$\frac{3}{15}$ or $\frac{1}{5}$

(1)

7. On a particular day, 98 adults visit a leisure centre.

Some are going to the gym.
Some are going to play tennis.
Some are going to play badminton.
The rest are going swimming.

51 people are male.
21 out of the 40 going to the gym are male.
19 males and 7 females are going swimming.
7 out of the 20 people playing badminton are male.
Twice as many females play tennis than males.

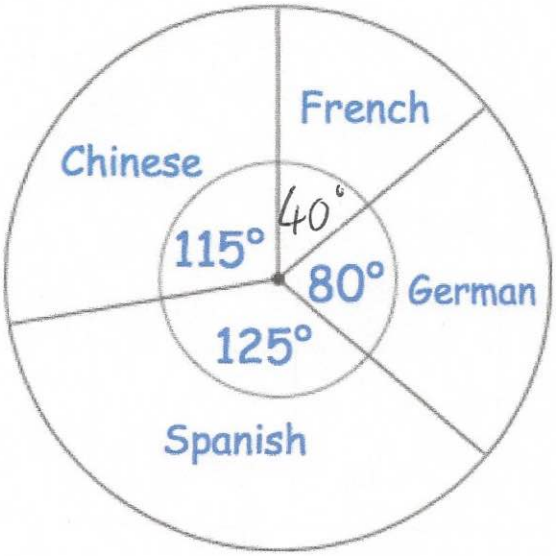
How many women play tennis?

	m	f	Total
Gym	21	19	40
Tennis	4	8	12
Badminton	7	13	20
Swimming	19	7	26
total	51	47	98

8

(2)

8. The pie chart shows information about the languages studied in a school.
There are 648 students in the school.
Each student studies one language.



How many more students study Chinese than French?

Chinese $\frac{115}{360}$ of 648 = 207

French $\frac{40}{360}$ of 648 = 72

207 - 72

135

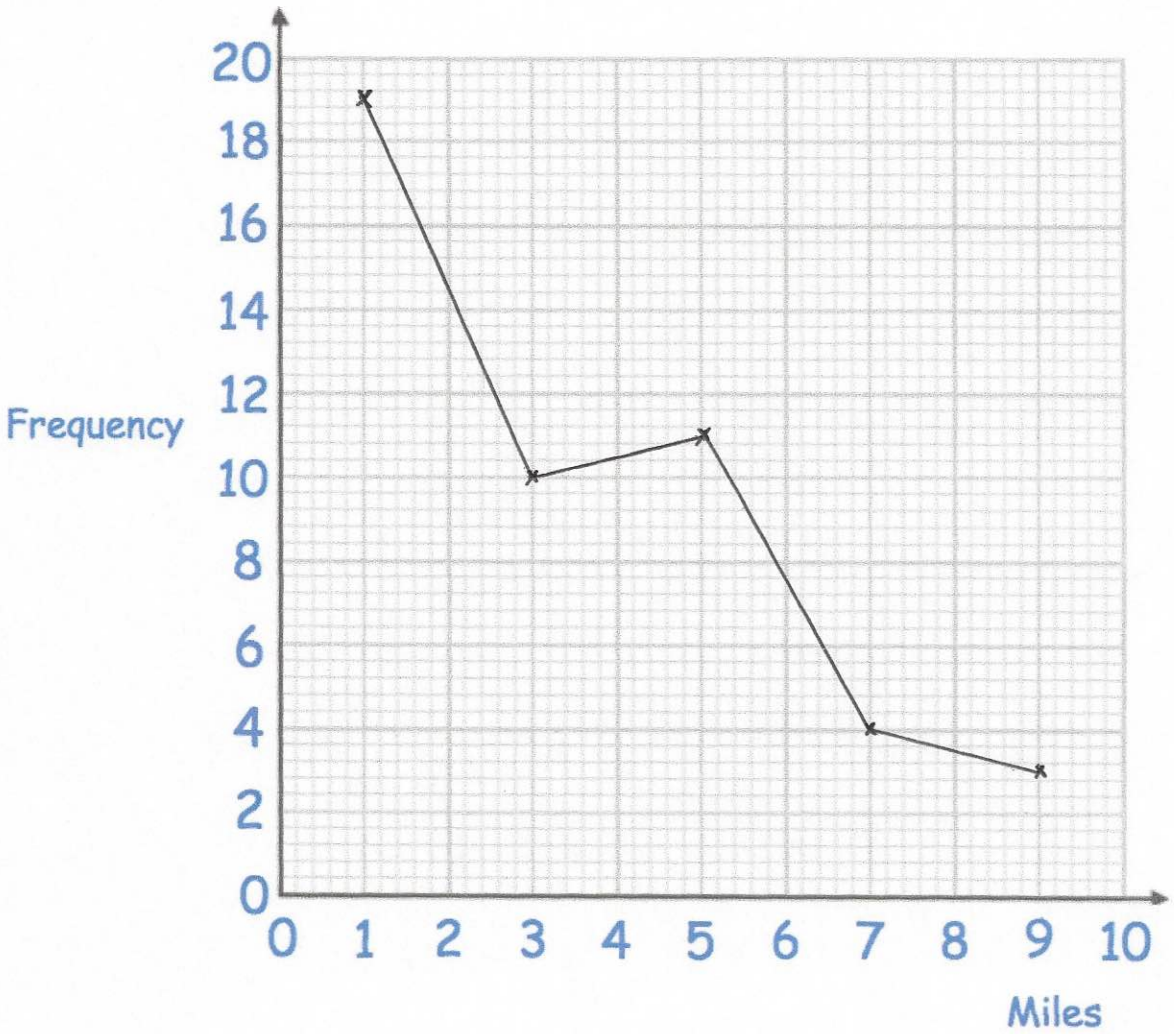
(4)

9. The table shows the distance travelled to school by 50 students.

Distance (miles)	Frequency
$0 < d \leq 2$	19
$2 < d \leq 4$	10
$4 < d \leq 6$	11
$6 < d \leq 8$	4
$8 < d \leq 10$	3

(a) Draw a frequency polygon to represent this data.

(2)



One student is chosen at random.

(b) Work out the probability that this student travels more than 6 miles to school.

$\frac{7}{50}$

.....

(1)

10. The Highest Common Factor (HCF) of two numbers is 6.
The Lowest Common Multiple (LCM) of the same numbers is 60.

What are the two numbers?

12 and 30 etc

6 and 60

(2)

11. Simplify

$(2m^4)^3$

$8m^{12}$

(2)

12. Jim picks a five digit odd number.
The second digit is less than 5.
The fourth digit is a cube number The first digit is a prime number.
How many different numbers could he pick?

1st 2nd 3rd 4th 5th

4 x 5 x 10 x 2 x 5

2000

(3)

13. Given that $a = 4$, $b = 9$ and $c = -5$

Work out the value of

$$\frac{ab + 24}{2c}$$

$$\frac{36 + 24}{-10} = \frac{60}{-10}$$

-6

.....

(3)

---

14. Make w the subject of the formula

$$g = \frac{w}{w - 5}$$

$$g(w - 5) = w$$

$$gw - 5g = w$$

$$gw - w = 5g$$

$$w(g - 1) = 5g$$

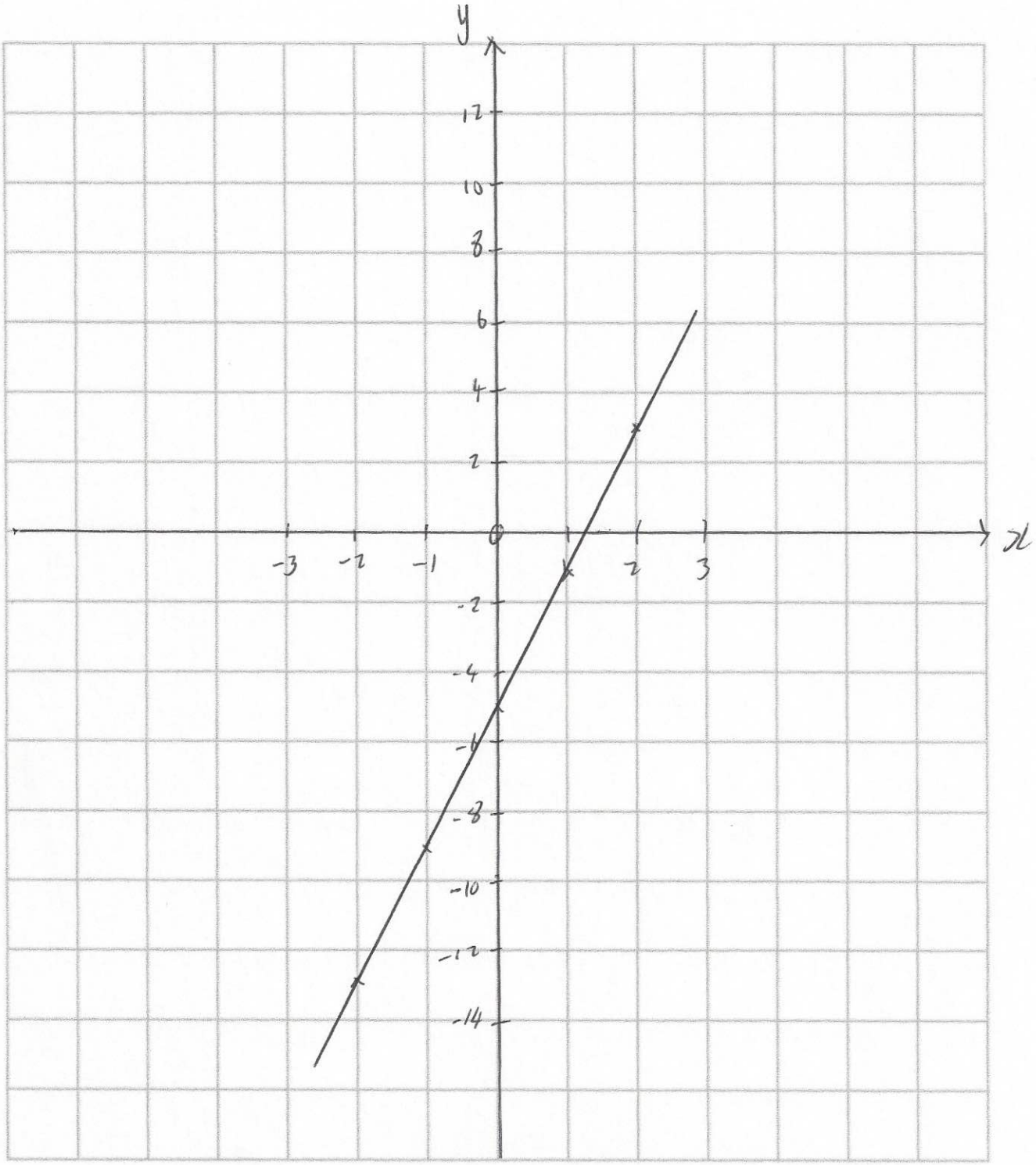
$$w = \frac{5g}{g - 1}$$

w = $\frac{5g}{g-1}$

(3)

15. On the grid, draw $y = 4x - 5$ for values of x from –2 to 2.

x	-2	-1	0	1	2
y	-13	-9	-5	-1	3



(4)

16. Solve the simultaneous equations

(1) $4x + 3y = 5$
(2) $2x - 5y = 9$ $\times 2$

Do not use trial and improvement

$4x + 3y = 5$

sub $4x - 10y = 18$

$13y = -13$

$y = -1$

put $y = -1$ into (1)

$4x - 3 = 5$

$4x = 8$

$x = 2$

$x = 2$ $y = -1$

(4)

check in (2)

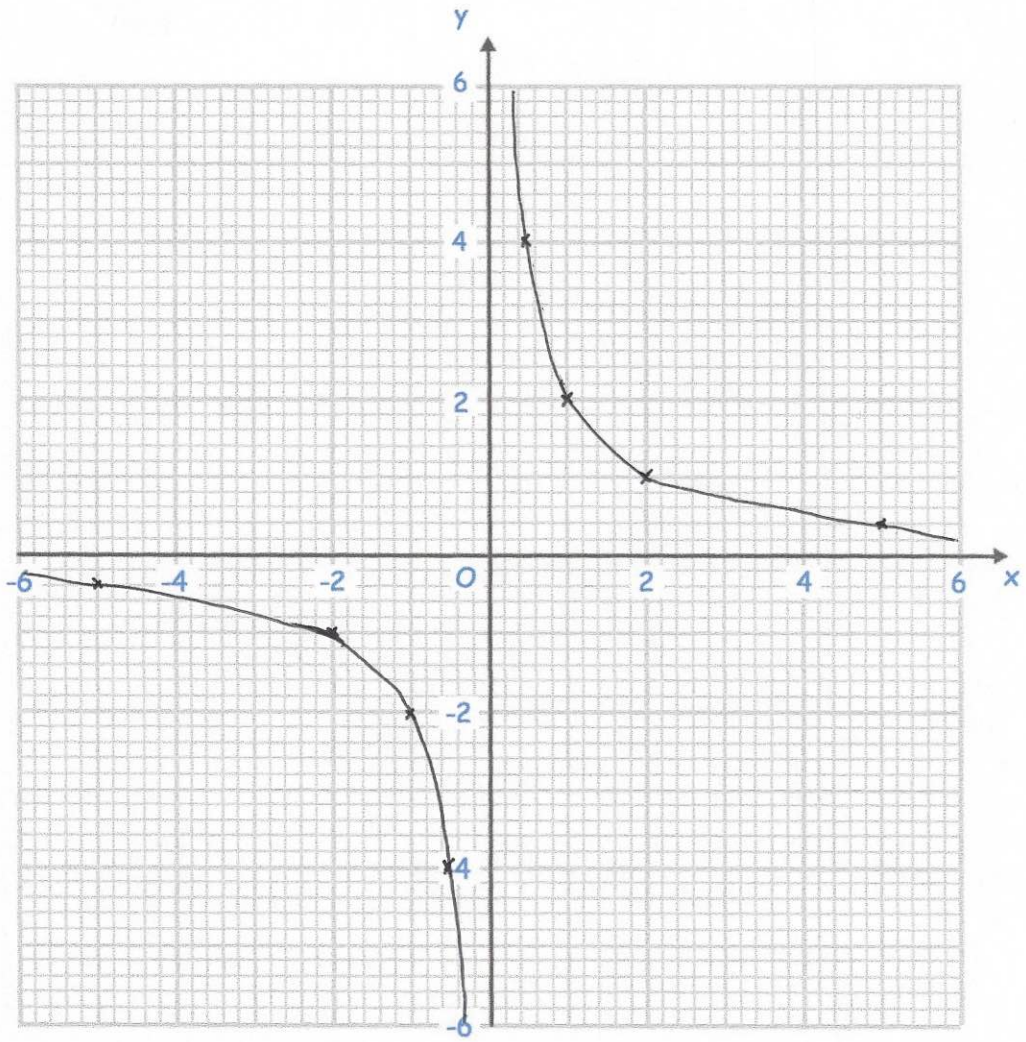
$4 - -5 = 9$ ✓

17. (a) Complete the table of values for $y = \frac{2}{x}$

x	-5	-2	-1	-0.5	0.5	1	2	5
y	-0.4	-1	-2	-4	4	2	1	0.4

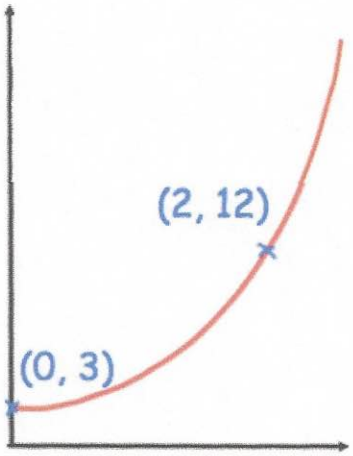
(2)

(b) On the grid, draw the graph of $y = \frac{2}{x}$ for $-5 \leq x \leq 5$



(2)

18.



The sketch shows a curve with equation
$y = ab^x$ where a and b are constants and $b > 0$

The curve passes through the points (0, 3) and (2, 12)

Calculate the value of a and b

$x = 0 \qquad y = ab^0 \qquad b^0 = 1$

$y = a$

$a = 3$

$(2, 12)$

$y = 3b^2$

$12 = 3 \times b^2$

$4 = b^2$

$b = 2$

$b \neq -2$ as $b > 0$ in question. (and as a graph.)

a = 3

b = 2

(3)

19. Write $0.5\dot{1}\dot{2}$ as a fraction.
Give your answer in its simplest form.

$x = 0.5121212...$

$10x = 5.121212...$

$1000x = 512.121212...$

$990x = 507$

$x = \frac{507}{990}$

$\frac{169}{330}$

.....

(3)

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20. Show that $(\sqrt{2} + 3\sqrt{8})^2 = 98$

$(\sqrt{2} + 3\sqrt{8})(\sqrt{2} + 3\sqrt{8})$

$2 + 3\sqrt{16} + 3\sqrt{16} + 72$ ✓ (9×8)

$2 + 12 + 12 + 72$

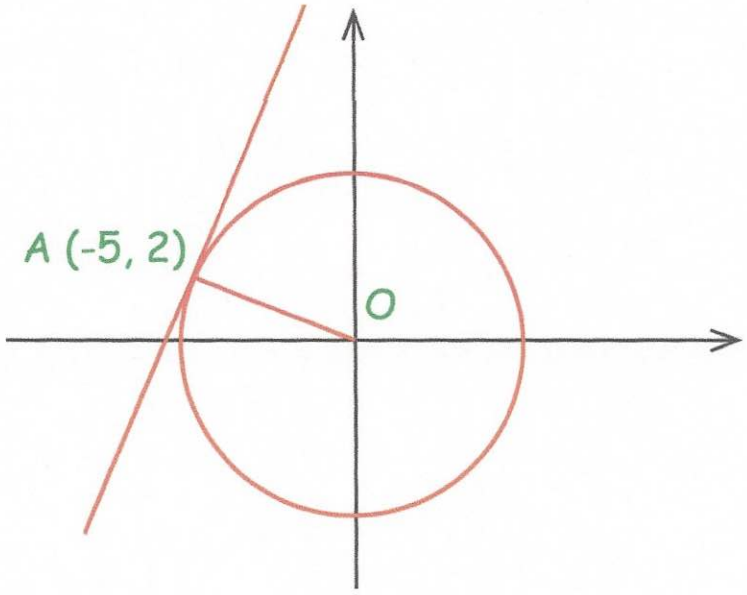
98

.....

(3)

21.

The diagram shows the circle $x^2 + y^2 = 40$ with a tangent at the point (2, 6)



(a) Find the gradient of the line AO.

$-\frac{2}{5}$

.....

(1)

(b) Find the gradient of the tangent

$\frac{5}{2}$

.....

(1)

(c) Find the equation of the tangent

$y = \frac{5}{2}x + c$

$2 = -\frac{25}{2} + c$

$c = 14.5$ or $\frac{29}{2}$

$y = \frac{5}{2}x + \frac{29}{2}$

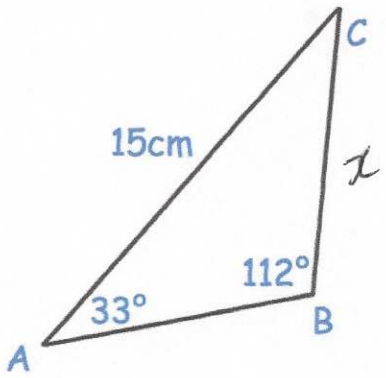
.....

(2)

or

$y = 2.5x + 14.5$

22.



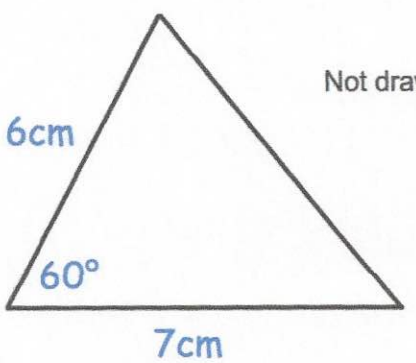
In triangle ABC the length of AC is 15cm.
Angle ABC = 112°
Angle BAC = 33°

Work out the length of BC.

$\frac{x}{\sin 33} = \frac{15}{\sin 112}$

8.81
.....cm
(3)

23.



Not drawn is scale.

Calculate the area of the triangle.

$\frac{1}{2}ab\sin C$

$\frac{1}{2} \times 6 \times 7 \times \sin 60$

18.19
.....cm²
(2)

24.

A television is placed on a table.

The area of the television in contact with the table is 750cm². $0.075 m^2$
The pressure on the table is 1760 newtons/m².

Work out the force exerted by the television on the table.

$F = P \times A$

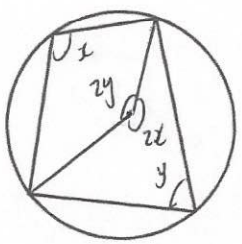
1760×0.075

132

.....N

(3)

25.



Prove the opposite angles in a cyclic quadrilateral add to 180°

$2x + 2y = 360$ (centre)

$\div 2$

$x + y = 180$

$\therefore$ opposite angles add to $180°$