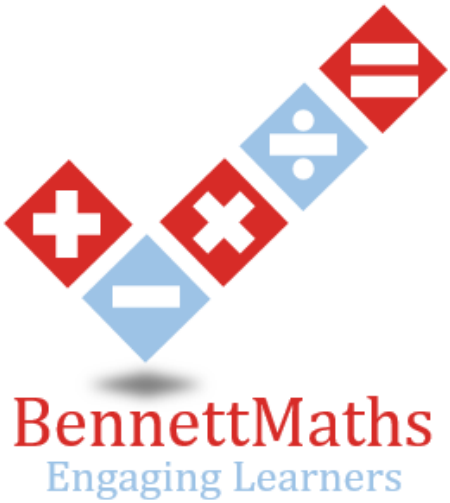
BennettMaths will be live on TikTok the night before paper 2, going through all the predicted papers.
Tuesday 2nd June at 8pm

Candidate surname	Other names



AQA

Best Guess Paper – 2H Calculator

Within this booklet you will find my best guess at which topics might be on the second AQA Higher gcse maths paper.

There may be other topics that appear on paper 2, so please ensure that you continue to revise all topics.

The paper consists of 24 questions totalling 80 marks.

1

(a) Write down the highest common factor (HCF) of 30 and 45 **[1 mark]**

Answer 15

(b) Write down the lowest common multiple (LCM) of 30 and 45 **[1 mark]**

Answer 90

2 Solve $5 - 4x \geq 12$ **[2 marks]**

$+4x \quad +4x$

$5 \geq 4x + 12$

$-7 \geq 4x$

$\frac{-7}{4} \geq x$

Answer

3

Sam invests £3500 into a bank account paying 5.4% compound interest, per annum, for 3 years. **[3 marks]**

Work out the total amount of interest gained after 3 years.

$3500 \times 1.054^3 = 4098.16$

$4098.16 - 3500$

Answer £598.16

4 A number, n, is rounded to 2 significant figures.
The result is 2.3
Complete the error interval for n

[2 marks]

$2.25 \leq n < 2.35$

5
Frankie travels 400km in 4 hours and 48 minutes. **[2 marks]**

Work out his average speed, giving your answer as a decimal.

$\frac{48}{60} = \frac{4}{5} = 0.8$ $4 + 0.8 = 4.8$

$400 \div 4.8 = 83.\dot{3}$

Answer $83.\dot{3}$ km/h

6 A linear sequence has:
2nd term = 190
5th term = 166

198 190 182 174 166
−8 −8

(a) Work out the nth term of the sequence **[2 marks]**

3 jumps = 24
1 = 8

Answer $-8n + 206$

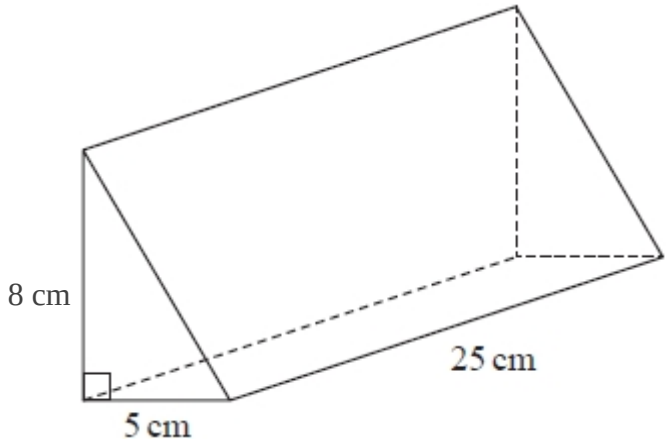
(b) Work out the first term in the sequence that is negative **[2 marks]**

$-8n + 206 < 0$

$n = 25.75$ 26th term

Answer -2

7 The diagram shows a prism.



The cross section of the prism is a right-angled triangle.

The base of the triangle has length 5 cm

The prism has length 25 cm

The mass of the prism is 250g.

Work out the density of the prism. **[3 marks]**

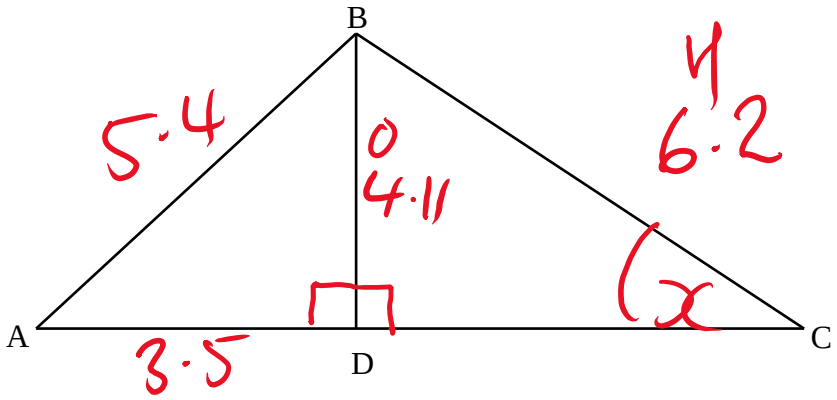
$\frac{8 \times 5}{2} \times 25 = 500\ cm^3$

$\frac{250}{500} = 0.5$

Answer $0.5\ g/cm^3$

8 Triangle ABC has been drawn below.
Angle ADB and BDC are 90°.
AB = 5.4 cm
BC = 6.2 cm
AD = 3.5 cm

.



Work out the size of angle BCD

[4 marks]

$BD^2 = 5.4^2 - 3.5^2$

$BD = 4.11$

$\sin(x) = \frac{4.11}{6.2}$ $x = \sin^{-1}\left(\frac{4.11}{6.2}\right)$

Answer 41.52

9 Solve

$$5x^2 + 2x - 10$$

[3 marks]

$a=5 \quad b=2 \quad c=-10$

$$x = \frac{-2 \pm \sqrt{2^2 - (4 \times 5 \times -10)}}{2 \times 5}$$

Answer $x = 1.23, \; x = -1.63$

10 Solve algebraically

$$3x + 2y = 9.5 \quad \times 5$$
$$7x - 5y = 41.5 \quad \times 2$$

[4 marks]

$+ \; 15x + 10y = 47.5$
$14x - 10y = 83$
$29x = 130.5$
$x = 4.5$

$3(4.5) + 2y = 9.5$
$13.5 + 2y = 9.5$
$2y = -4$
$y = -2$

Answer $x = 4.5, \; y = -2$

11 The frequency table below shows the pocket money received by 35 pupils in April.
[4 marks]

Pocket Money	Frequency
$0 \leq x < 5$	7
$5 \leq x < 8$	8
$8 \leq x < 10$	16
$10 \leq x < 20$	4

35

mp: 2.5, 6.5, 9, 15

mp x f: 17.5, 52, 144, 60

273.5

The mean amount of pocket money received in March was £7.50.
By estimating the mean, determine in which month pupils received the most pocket money, on average.

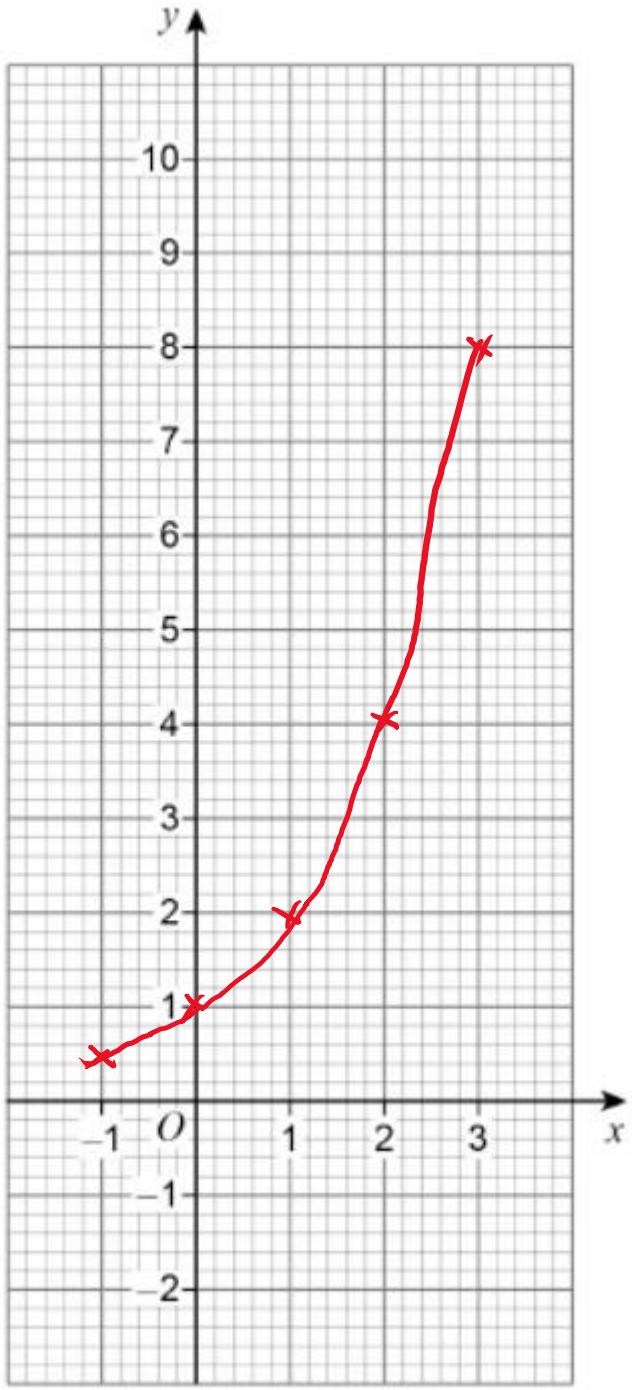
March ☐ April ☑

273.5 ÷ 35 = £7.81

12(a) Complete the table of values of $y = 2^x$. **[2 marks]**

x	-1	0	1	2	3
y	$\frac{1}{2}$	1	2	4	8

(b) Draw the graph of $y = 2^x$ for values of x from -1 to 3 **[2 marks]**



13 A combination lock contains 4 digits using the numbers 0 to 9.

(a) If numbers can be repeated, how many different combinations are possible

[2 marks]

$10 \times 10 \times 10 \times 10$

Answer 10000

The combination lock requires different numbers for each digit

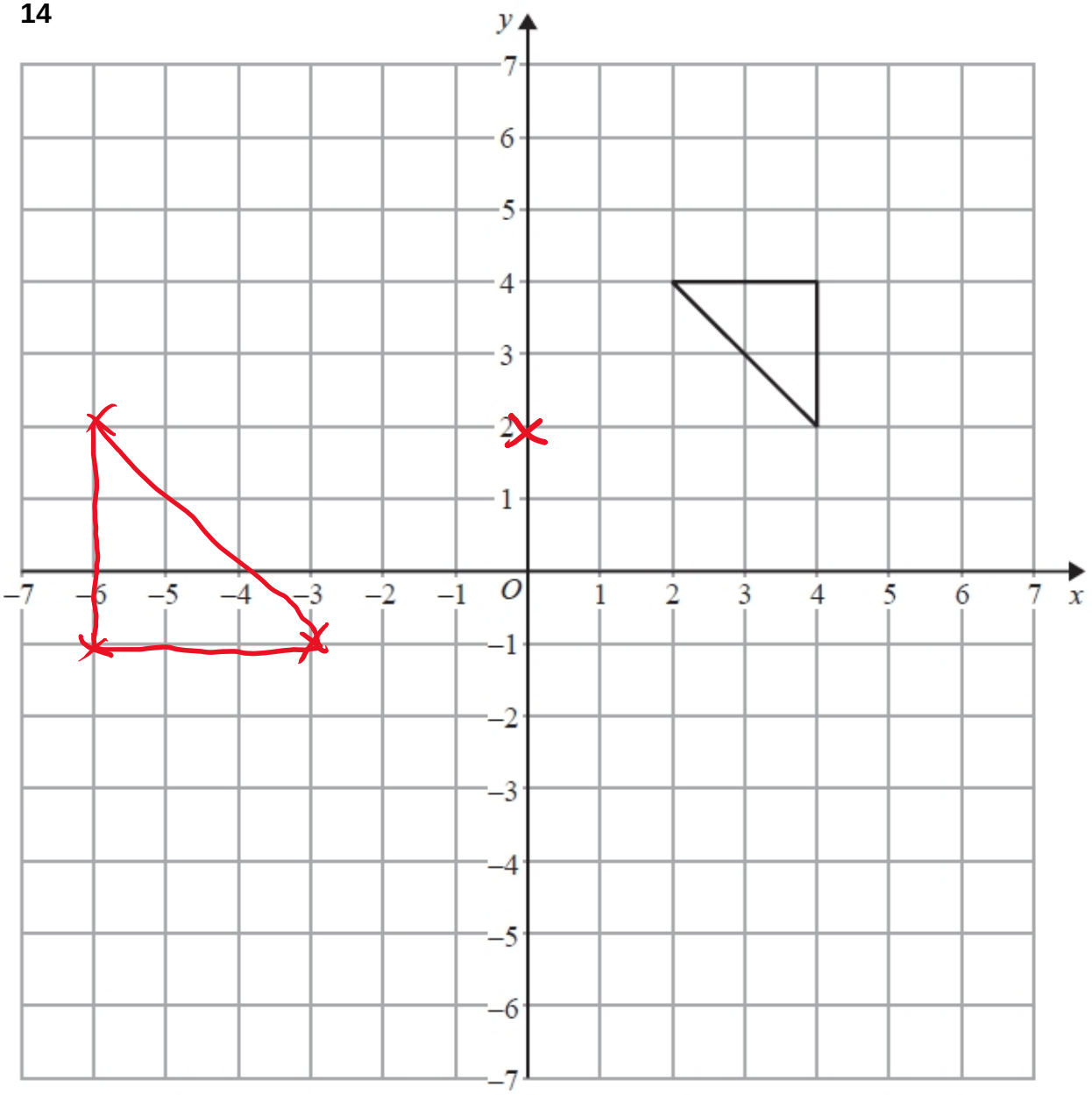
(b) Work out how many different combinations are possible

[2 marks]

$10 \times 9 \times 8 \times 7$

Answer 5040

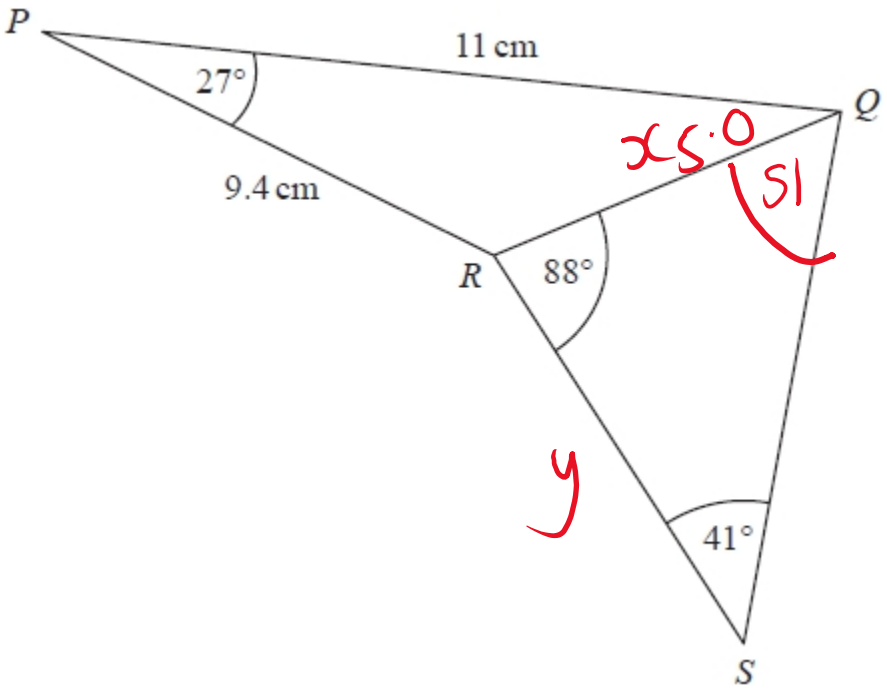
14



On the grid, enlarge the triangle by scale factor -1.5 with centre (0,2)

[2 marks]

15 PQR and QRS are triangles



Calculate the length of RS.

Give your answer correct to 3 significant figures.

You must show all of your working

[4 marks]

$x = \sqrt{9.4^2 + 11^2 - 2 \times 9.4 \times 11 \times \cos(27)}$

$x = 5.0$

$\frac{y}{\sin(51)} = \frac{5}{\sin(41)}$ $\quad y = \frac{5}{\sin(41)} \times \sin(51)$

Answer 5.92

16 Simplify fully

$$\frac{60x^2 - 15}{2x + 1}$$

[2 marks]

$\frac{15(4x^2-1)}{2x+1} = \frac{15(2x+1)(2x-1)}{2x+1}$

$15(2x-1)$ or $30x-15$

Answer _____

$r = 12.5$

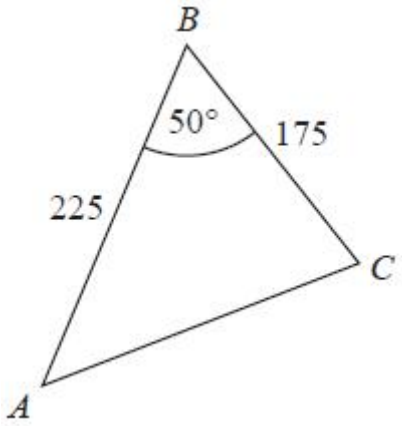
17 A circle ***C*** has a centre of $(0,0)$ and a diameter of 25

Write down the equation of the circle

[1 mark]

Answer $x^2 + y^2 = 156.25$

18 Sam measures a field.



	LB	UB
The length AB measures 225m correct to the nearest 5m	222.5	227.5
The length BC measures 175m correct to the nearest 5m	172.5	177.5
Angle ABC measures 50° correct to the nearest degree.	49.5	50.5

Work out the upper bound for the area of the field.

You must show your working.

[4 marks]

$\frac{1}{2} \times 227.5 \times 177.5 \times \sin(50.5)$

$=$

Answer 15579.58

19 y is directly proportional to x^3

When y is 320 and x is 4.

Work out the value of x when y is 135

[3 marks]

$y = k \times x^3$

$320 = k \times 4^3$

$k = 5$

$y = 5 \times x^3$

$135 = 5 \times x^3$

$27 = x^3$

$x = 3$

Answer _____

20 The population of grey squirrels in Longridge in 2026 was 12,000.
Population growth is given by the following iterative formula

$$P_{n+1} = 1.04P_n + 180$$

Work out an estimate for the number of grey squirrels in Longridge in 2027, 2028 and 2028

[3 marks]

$1.04(12000) + 180$

Answers

2027 12660

2028 13346

2029 14060

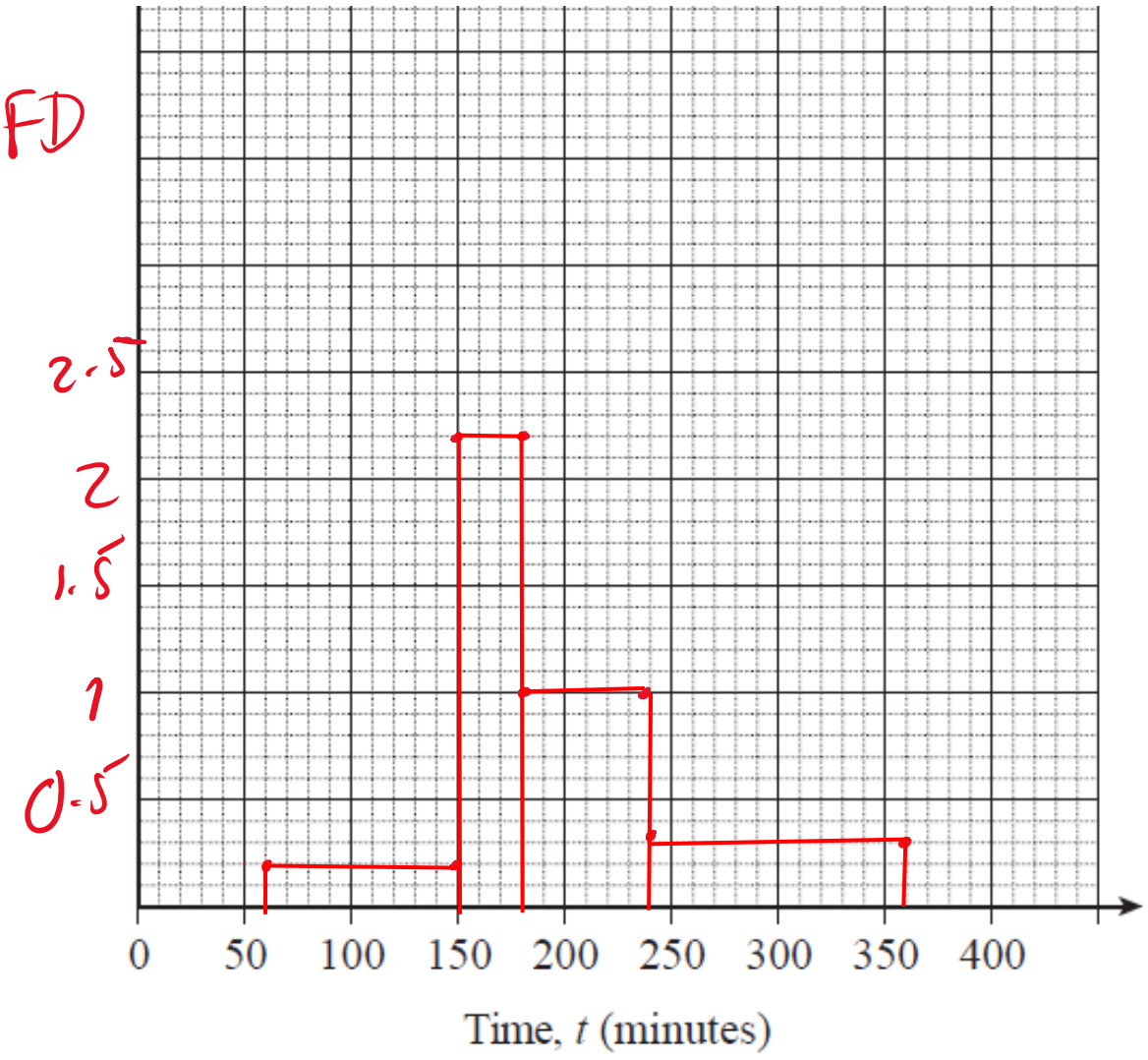
21 The frequency table shows the time taken to complete a journey

Time, t (minutes)	Frequency
$60 < t \leqslant 150$	18
$150 < t \leqslant 180$	66
$180 < t \leqslant 240$	60
$240 < t \leqslant 360$	36

CW
90
30
60
120

F.D
0.2
2.2
1
0.3

Construct a histogram to represent this information **[3 marks]**



22 $f(x) = 3x^2 - 2$ $g(x) = 2x + 3$

(a) Find fg(2) **[2 marks]**

$2(2)+3$
$=7$

$3(7)^2-2$
$=145$

Answer 145

(b) Find $f^{-1}(x)$ **[2 marks]**

$y = 3x^2 - 2$
$x = 3y^2 - 2$
$x+2 = 3y^2$

$\frac{x+2}{3} = y^2$

$\sqrt{\frac{x+2}{3}} = f^{-1}(x)$

Answer

(c) Solve $fg(x) = g^{-1}(5)$ **[4 marks]**

$g^{-1}(x) = \frac{x-3}{2}$ $g^{-1}(5) = 1$

$3(2x+3)^2-2$
$3(4x^2+12x+9)-2$
$12x^2+36x+27-2=1$
$12x^2+36x+24=0$
$x^2+3x+2=0$
$(x+2)(x+1)$

Answer $x=-2, x=-1$

23
There are 20 pupils in a class.
x are girls and the rest are boys.

$g = x$
$b = 20 - x$

Two pupils are going to be selected at random.

Work out the probability of selecting 1 girl and 1 boy, giving your answer in terms of x, in its simplest form.

[5 marks]

$$P(g,b) = \frac{x}{20} \times \frac{20-x}{19} = \frac{20x-x^2}{380}$$

+

$$P(b,g) = \frac{20-x}{20} \times \frac{x}{19} = \frac{20x-x^2}{380}$$

$$\frac{40x-2x^2}{380} = \frac{20x-x^2}{190}$$

Answer _____

24

AFE is a straight line.

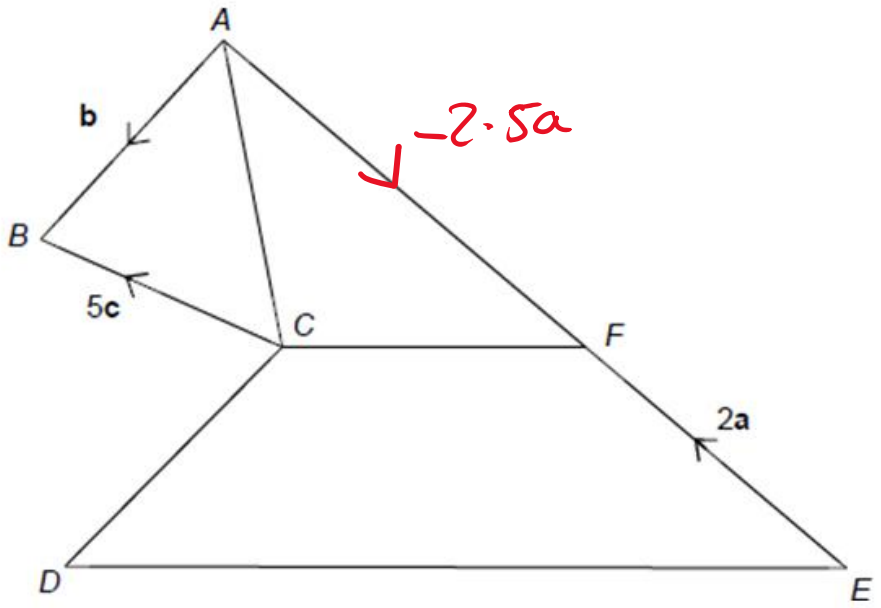
$AF : FE = 5 : 4$

DE is parallel to CF.

$DE = 2.5CF$

$\overrightarrow{EF} = 2\mathbf{a}$ $\overrightarrow{AB} = \mathbf{b}$ $\overrightarrow{CB} = 5\mathbf{c}$

AF : FE
5 : 4
-2.5a -2a



Work out $\overrightarrow{DE}$ in terms of **a**, **b** and **c**. **[5 marks]**

$\overrightarrow{CF} = 5c - b - 2.5a$

$\overrightarrow{DE} = 2.5(5c - b - 2.5a)$

$\overrightarrow{DE} = 12.5c - 2.5b - 6.25a$

Answer _____