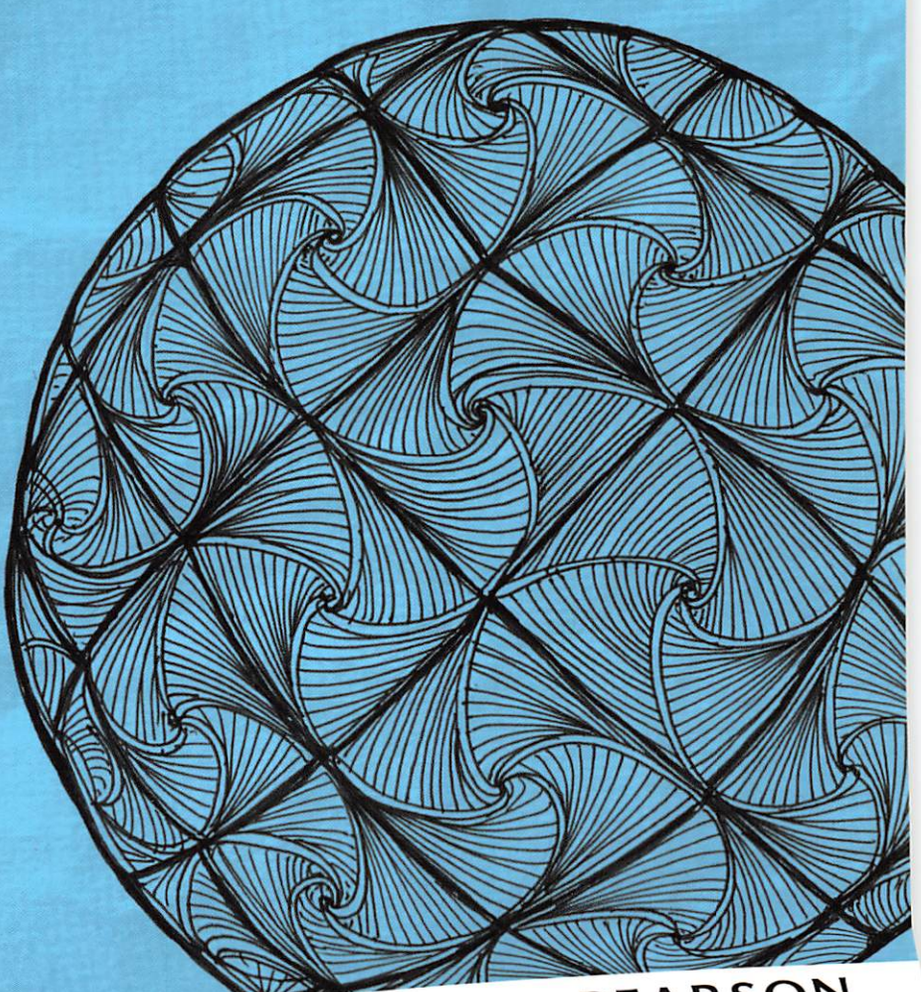
REVISE EDEXCEL GCSE (9–1)

Mathematics

REVISION WORKBOOK

Higher



For the (9–1) exams

PEARSON

Contents

Number

Algebra

Ratio & Proportion

Geometry & Measures

Probability & Statistics

Practice papers

137 Answers & Imprint

A small bit of small print
Edexcel publishes Sample Assessment Material and the Specification on its website. This is the official content and this book should be used in conjunction with it. The questions in 'Now try this' have been written to help you practise every topic in the book. Remember: the real exam questions may not look like this.

Paper 1

Practice exam paper

Higher Tier
Time: 1 hour 30 minutes
Calculators must not be used
Diagrams are NOT accurately drawn, unless otherwise indicated.
You must show all your working out.

1 Here are the ingredients needed to make 6 hotcakes.

Hotcakes
Makes 6 hotcakes
50 g sugar
200 g butter
200 g flour
10 m*l* milk

Peter makes some hotcakes.
He uses 15 m*l* milk.

(a) How many hotcakes does Peter make?

..... **(1 mark)**

Asha has
600 g sugar
1200 g butter
1350 g flour
430 m*l* milk

(b) Work out the greatest number of hotcakes Asha can make.

..... **(2 marks)**

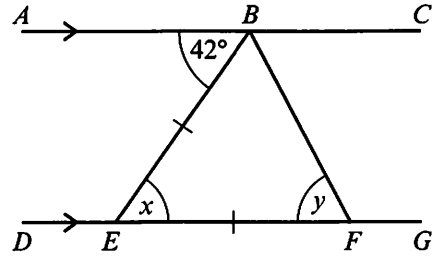
2 Here are the speeds, in miles per hour, of 16 cars.

41	62	53	59	46	45	43	39
64	53	54	56	52	49	65	58

Draw an ordered stem-and-leaf diagram for these speeds.

(3 marks)

3 *ABC* is parallel to *DEFG*. *BE* = *EF*. Angle *ABE* = 42°.



(a) (i) Work out the size of the angle marked x.

$x =$ .....

(ii) Give a reason for your answer.

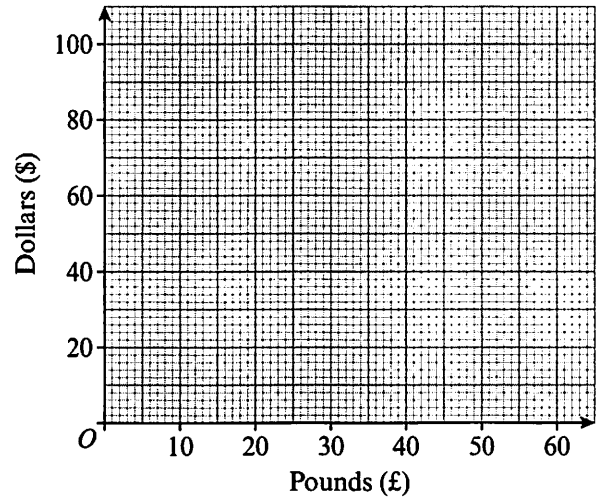
..... **(2 marks)**

(b) Work out the size of the angle marked y.

$y =$ ..... **(1 mark)**

4 Pavan comes back from the USA with some US dollars ($) which he wants to change into pounds (£). He uses the exchange rate £1 = $1.50

(a) On the grid, draw a conversion graph Pavan can use to change between pounds and dollars.



(2 marks)

Pavan changes $1000 into pounds.

(b) Use your graph to work out how many pounds he gets for $1000

£..... **(2 marks)**

5 This is some information about a class.

- There are 40 students in the class.
- 16 of the students study Latin.
- 19 of the students study Spanish.
- 7 of the students study both Latin and Spanish.

(a) Draw a Venn diagram to represent this information.

(4 marks)

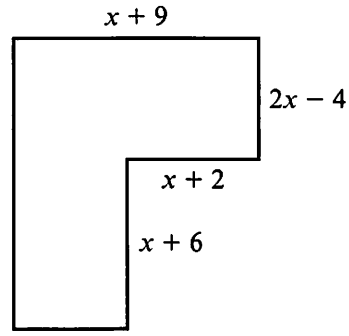
(b) Show that 30% of the students do not study Latin or Spanish.

(2 marks)

6 Expand and simplify $(x + 5)(x - 2)$

..... **(2 marks)**

7 Here is a six-sided shape.



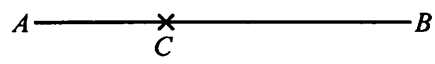
All the measurements are in centimetres. All the corners are right angles.
The perimeter of the shape is 94 cm.
Work out the value of x.
You must show your working.

(5 marks)

8 Amy shares a bag of sweets with her friends.
She gives Beth $\frac{2}{5}$ of the sweets.
She gives Carl $\frac{3}{10}$ of the sweets.
She has 18 sweets left.
How many sweets does Amy give to Beth?

..... **(4 marks)**

9 A, C and B are three places on a map.
ACB is a straight line.
Construct the perpendicular to the line AB at point C.
You must leave all your construction lines.



(2 marks)

10 A force of 1800 newtons is applied to a square piece of metal plate measuring 30 cm.
Using the formula pressure = $\frac{\text{force}}{\text{area}}$, work out the pressure exerted on the metal plate, in N/m^2.

..... N/m^2 **(2 marks)**

11 A circular chopping board has a radius of 80 mm.

(a) Work out the area of the chopping board, in mm^2.
Leave your answer in terms of π.

..... mm^2 **(2 marks)**

(b) The volume of the chopping board is $115\,200\pi\,mm^3$.
Work out the thickness of the chopping board.

..... mm **(2 marks)**

12 (a) (i) Write 50 000 in standard form.

.....

(ii) Write 9.6×10^{-5} as an ordinary number.

..... **(2 marks)**

(b) Work out the value of $(5 \times 10^4) \times (3 \times 10^6)$.
Give your answer in standard form.

..... **(2 marks)**

13 Solve the simultaneous equations
$5x + 2y = 11$
$4x - 3y = 18$

..... **(4 marks)**

14 The speed, s, of a particle is inversely proportional to the time, t, taken.
When $s = 12$, $t = 4$

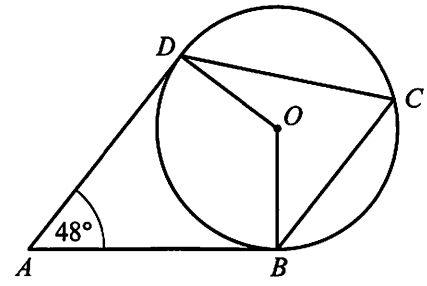
(a) Find a formula for s in terms of t.

..... **(3 marks)**

(b) Hence, or otherwise, calculate the value of s when $t = 3$

$s =$ ..... **(1 mark)**

15 The diagram shows the points B, C and D on a circumference of a circle with centre O.



AB and AD are tangents to the circle. Angle $DAB = 48°$
Work out the size of angle BCD.
Give a reason for each stage in your working.

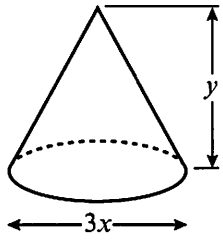
.....° **(4 marks)**

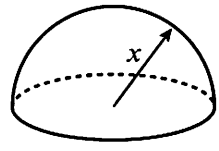
16 Solve $x^2 - 8x > 20$

..... **(4 marks)**

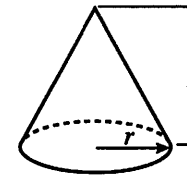
17 A solid hemisphere has a radius of x.
A solid cone has a **diameter** of $3x$ and a perpendicular height of y.
The hemisphere and the cone have equal volumes.

Show that $y = \frac{8}{9}x$

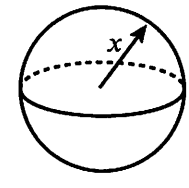




Volume of cone $= \frac{1}{3}\pi r^2 h$



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



(3 marks)

18 (a) Rationalise the denominator of $\frac{12}{\sqrt{3}}$

..... **(2 marks)**

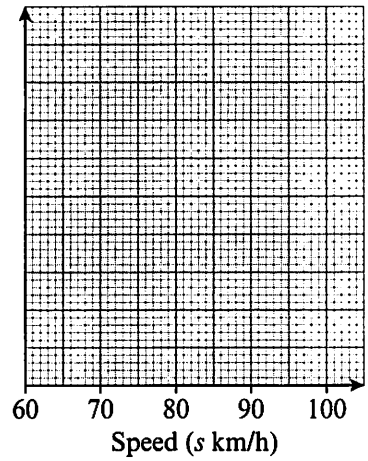
(b) Expand $(2 + \sqrt{5})(3 + \sqrt{5})$
Give your answer in the form $a + b\sqrt{5}$ where a and b are integers.

..... **(2 marks)**

19 The table gives some information about the speeds, in km/h, of 120 motorbikes.

Speed(s km/h)	**Frequency**
$60 < s \leqslant 80$	32
$80 < s \leqslant 90$	42
$90 < s \leqslant 95$	26
$95 < s \leqslant 100$	20

(a) On the grid, draw a histogram for the information in the table.



(3 marks)

(b) Work out an estimate for the number of motorbikes with a speed of less than 75 km/h.

..... **(2 marks)**

20 Simplify fully $\frac{x^2 - 2x - 15}{2x^2 - 9x - 5}$

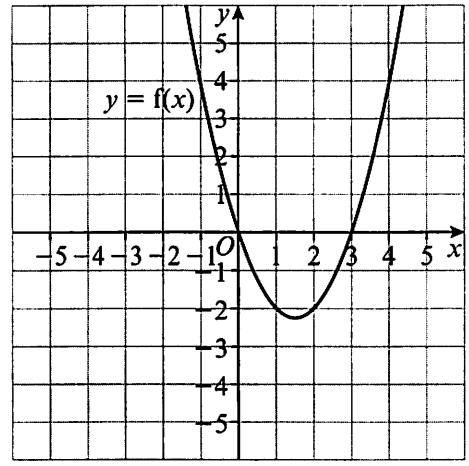
..... **(3 marks)**

21 Write $\frac{2}{x+4} + \frac{3}{x-2}$ as a single fraction in its simplest form.

..... **(3 marks)**

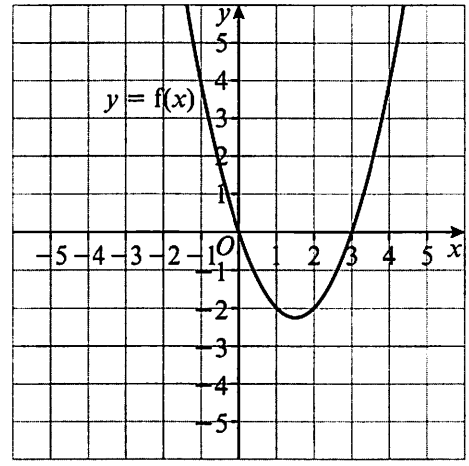
22 The graph of $y = f(x)$ is shown on each of the grids.

(a) On this grid, sketch the graph of $y = f(x + 2)$



(2 marks)

(b) On this grid, sketch the graph of $y = -f(x)$



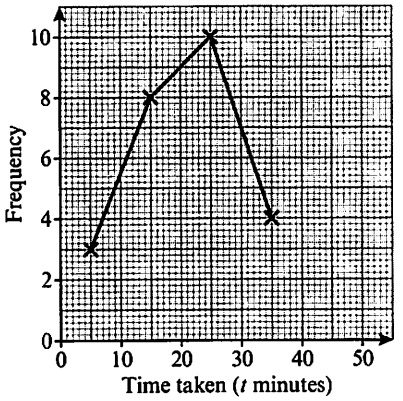
(2 marks)

TOTAL FOR PAPER = 80 MARKS

Practice exam papers for Paper 2 and Paper 3 are available to download free from the Pearson website. Scan this QR code or visit http://activetea.ch/1GYGg8W.

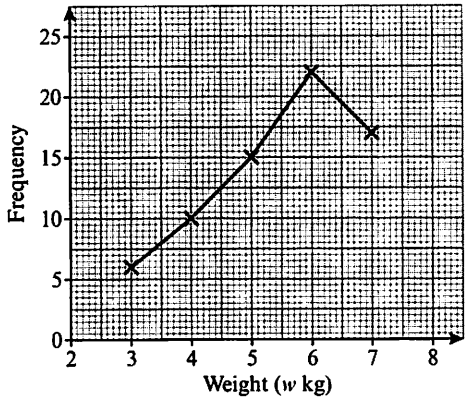
121. Frequency polygons

1 (a)



(b) $20 < t \leq 30$

2 (a)



(b) $5.5 < w \leq 6.5$

122. Comparing data

1 The median in class 11A is lower than the median in class 11B. The range for both classes is the same

2 Anjali has a larger range/IQR. Carol has a higher median

123. Probability

1 (a) 0.7 (b) 0.3

2 0.21

3 (a) 0.62 (b) 0.21

4 (a) 0.68 (b) 0.08

124. Relative frequency

1 (a) $\frac{53}{302}$ (b) $\frac{140}{302}$

2 (a) $\frac{1}{5}$ (b) $\frac{17}{50}$ (c) $\frac{41}{50}$

3 (a) $\frac{143}{202}$

(b) Quite accurate, because a large sample

125. Venn diagrams

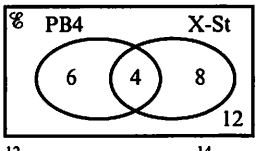
1 (a) (i) 15 (ii) Maths

(b) (i) 9 (ii) Do not study French nor German

2 (a) 0.6 (b) 0.5 (c) 0.4

3 (a) $\frac{1}{8}$ (b) $\frac{11}{40}$

4 (a)



(b) $\frac{12}{30}$ (c) $\frac{14}{30}$

126. Conditional probability

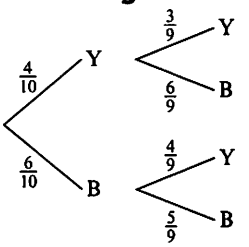
1 (a) $\frac{85}{219}$ (b) $\frac{85}{183}$

2 (a) $\frac{26}{38}$ (b) $\frac{26}{46}$

3 (a) $\frac{9}{39}$ (b) $\frac{25}{62}$

127. Tree diagrams

1 (a)



(b) $\frac{4}{9}$ (c) $\frac{12}{90}$ (d) $\frac{48}{90}$

2 (a) 0.085

(b) 0.19

128. Problem-solving practice 1

1 (a) (i) 0.75 (ii) 0.2

(b) 30

2 The median height in Park A is greater the median height in Park B. The range in Park B is greater than in Park A

3 (a) $\frac{7}{25}$ (b) $\frac{12}{25}$

129. Problem-solving practice 2

4 $\frac{27}{43}$

5 15

6 (a) $\frac{31}{80}$ (b) $\frac{17}{28}$

MATHS PRACTICE EXAM PAPER

Paper 1

1 (a) 9

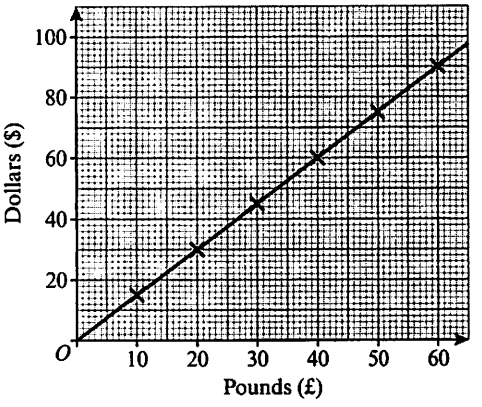
(b) 36

2 3 | 9
4 | 1 3 5 6 9
5 | 2 3 3 4 6 8 9
6 | 2 4 5
3|9 means 39 mph

3 (a) (i) 42° (ii) Alternate angles

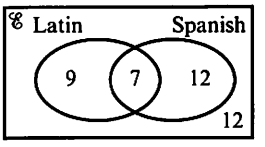
(b) 69°

4 (a)



(b) £667

5 (a)



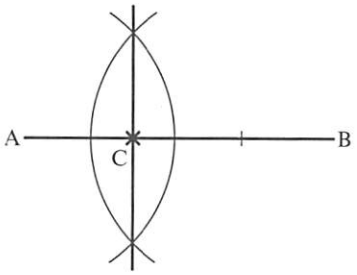
(b) $\frac{12}{40} \times 100 = 30\%$

6 $x^2 + 3x - 10$

7 9 cm

8 24 sweets

9



10 20 000

11 (a) 6400π (b) 18 mm

12 (a) (i) 5×10^4 (ii) 0.000 096
(b) 1.5×10^{11}

13 $(3, -2)$

14 (a) $s = \frac{48}{t}$ (b) 16

15 Angle $DOB = 360° - (48° + 90° + 90°) = 132°$
Angles in a quadrilateral add up to 360°; tangent to the circle is at 90°
Angle $BCD = 66°$
Angle at centre is twice angle at circumference

16 $x < -2$ and $x > 10$

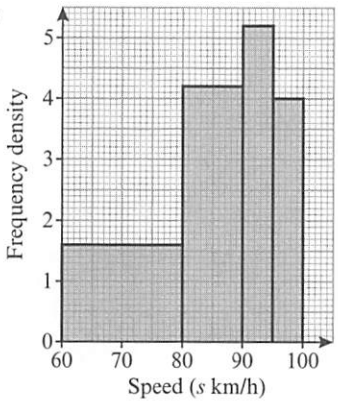
17 $\frac{1}{2}\left(\frac{4}{3}\pi x^3\right) = \frac{1}{3}\pi\left(\frac{3x}{2}\right)^2 y$

$$\frac{2}{3}x^3 = \frac{3}{4}x^2y$$

$$y = \frac{8}{9}x$$

18 (a) $4\sqrt{3}$ (b) $11 + 5\sqrt{5}$

19 (a)

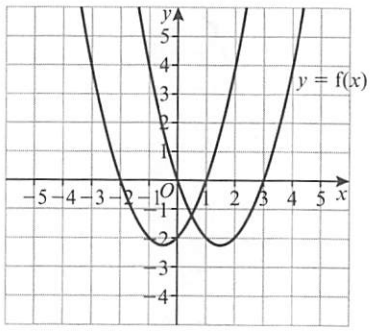


(b) 24

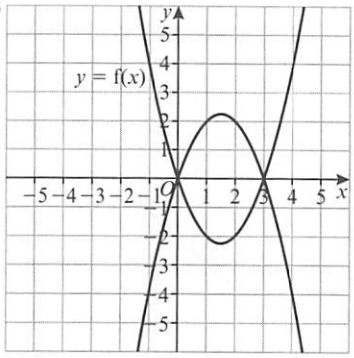
20 $\frac{x+3}{2x+1}$

21 $\frac{5x+8}{(x+4)(x-2)}$

22 (a)



(b)



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