Write your name here

Surname	Other names
Answers	

Grade One Paper
Level 1 / Level 2 GCSE
(9–1)

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics Revision H

Grade 1 - 3

Homework
Time: 2 hours 30 minutes

Paper Reference
Revision

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.
Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your surname and first name in the correct boxes.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **You must show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may be used but you must show your working out.**

Information

- The total mark for this paper is 150
- 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.

Turn over ▶

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Write the following numbers in order of size

-6 6 0 -3 -1

-6 -3 -1 0 6

(1)

2 Write the following numbers in order of size

12 -8 7 -5 -9

-9 -8 -5 7 12

(1)

3 Change 25 mm into centimetres

10mm = 1cm 25 ÷ 10 =

2.5cm

(1)

4 Change 8 mm into centimetres

8 ÷ 10 =

0.8cm

(1)

5 Change 4 cm into millimetres

1cm = 10mm 4 x 10 =

40 mm

(1)

6 Change 9 cm into millimetres

9 x 10 =

90 mm

(1)

7 Write down the seventh odd number

7 x 2 = 14

13

Odd numbers come first (1, 2..) so 14-1

(1)

8 Write down the twelfth even number

12 x 2 =

24

(1)

9 Write down the fifteenth odd number

$(15 \times 2) - 1$

29

(1)

10 Below is a list of numbers

1 6 7 24 30

a From the list, write down a prime number.

(Exactly 2 distinct factors)

7

(1)

b From the list, write down a multiple of 8.

$3 \times 8 = 24$

24

(1)

c From the list, write down a factor of 36.

1×36 6×6

6

(1)

d From the list, write down an even number.

$6 \div 2 = 3$ $30 \div 2 = 15$

$24 \div 2 = 12$

30

(1)

11 Simplify $4p \times 3p^2 \times 2q$

$4 \times 3 \times 2 = 24$

$p \times p^2 = p^3$

$24p^3q$

(1)

12 Simplify $\frac{8x \times 2x^2}{4x^3}$ $= \frac{16x^3}{4x^3}$

$16 \div 4 = 4$

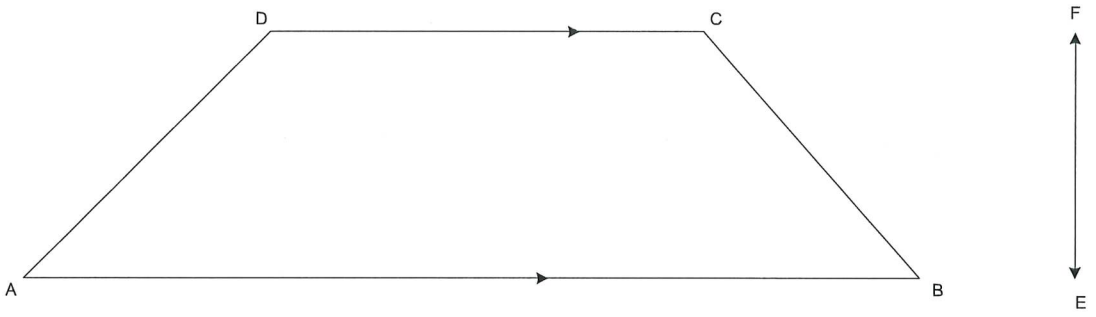
$x^3 \div x^3 = 1$

4

(1)

13 Here is a quadrilateral ABCD and a line segment EF.

The line segment is the same length as the perpendicular height of the shape.



a Measure the length of line AB to the nearest mm.

119 mm

(1)

b Measure the length of line CD to the nearest mm.

~~119~~ 58 mm

(1)

c Measure the length of EF to the nearest mm.

32 mm

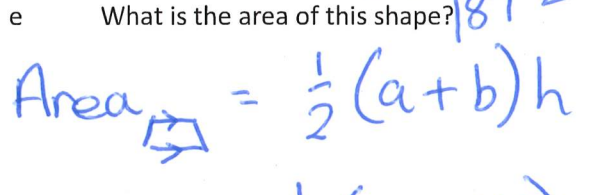
(1)

d What is the mathematical name for this shape?

trapezium

(1)

e What is the area of this shape?



a is CD h is EF
b is AB

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

$= \frac{1}{2}(58+119) \times 32$

$= \frac{1}{2}(177) \times 32$

$= 177 \times 16$

117 × 16 = 702 + 1170 = 1872

1872 mm²

(3)

14 $3\frac{2}{3} \times \frac{3}{4}$

$\frac{(3\times3)+2}{3} \times \frac{3}{4} = \frac{11}{3} \times \frac{3}{4} = \frac{33}{12} = 2\frac{9}{12} = 2\frac{3}{4}$

33 ÷ 12 = 2 r 9 (remainder)

(3)

15 $1\frac{3}{5} \div \frac{3}{4}$

$\frac{(1\times5)+3}{5} \div \frac{3}{4} = \frac{8}{5} \div \frac{3}{4} = \frac{8}{5} \times \frac{4}{3} = \frac{32}{15} = 2\frac{2}{15}$

KCF

32 ÷ 15 = 2 r 2 (remainder)

$2\frac{2}{15}$

(3)

16 $5\frac{7}{8} \times 2\frac{4}{5}$

$\frac{(5\times8)+7}{8} \times \frac{(2\times5)+4}{5} = \frac{47}{8} \times \frac{14}{5} = \frac{47}{4} \times \frac{7}{5} = \frac{329}{20} = 16\frac{9}{20}$

$16\frac{9}{20}$

(3)

17 $7\frac{4}{9} \div 2\frac{5}{8}$

$\frac{(7\times9)+4}{9} \div \frac{(2\times8)+5}{8} = \frac{67}{9} \div \frac{21}{8}$

KCF

$= \frac{67}{9} \times \frac{8}{21} = \frac{536}{189} = 2\frac{158}{189}$

67 × 8 = 536

189 = 3 × 3 × 3 × 7

378 = 2 × 3 × 3 × 3 × 7

536 − 378 = 158

$2\frac{158}{189}$

(3)

18 Calculate 25% of 35.

10% = 3·5

5% = 1·75

3·5 + 3·5 + 1·75 = 8·75

10% + 10% + 5% = 25%

8·75

(2)

19 Calculate 45% of 48.

10% = 4·8

5% = 2·4

10 + 10 + 10 + 10 + 5 = 45%

4·8 + 4·8 + 4·8 + 4·8 + 2·4 = 21·6

21·6

(2)

20 Calculate 51% of 38.

$\frac{51}{\cancel{100}\ 50} \times \cancel{38}\ 19 = \frac{969}{50} = 19\frac{19}{50}$

51 × 20 = 1020

1020 − 51 = 969

$19\frac{19}{50}$

(2)

21 Calculate 16% of 95.

$4\ \frac{\cancel{16}}{\cancel{100}\ \cancel{20}\ 5} \times \cancel{95}\ 19 = \frac{76}{5} = 15\frac{1}{5}$

$15\frac{1}{5}$ or 15·2

(2)

22 Write 37% as a fraction.

$37\% = \frac{37}{100}$ — No shared factors

$\frac{37}{100}$

(1)

23 Write 8% as a fraction.

$\frac{8}{100} = \frac{2}{25}$

$\frac{2}{25}$

(1)

24 Write 23% as a fraction.

$\frac{23}{100}$

.....

(1)

25 Write 96% as a fraction.

$\frac{96}{100} = \frac{24}{25}$

$\frac{24}{25}$

.....

(1)

26 Solve $3x + 7 = 37$

$-7 \quad 3x + 7 = 37 \quad -7$

$\div 3 \quad 3x = 30 \quad \div 3$

$x = 10$

$x = 10$

.....

(2)

27 Solve $5x - 12 = 33$

$+12 \quad 5x - 12 = 33 \quad +12$

$\div 5 \quad 5x = 45 \quad \div 5$

$x = 9$

$x = 9$

.....

(2)

28 Solve $9x - 8 = 46$

$+8 \quad 9x - 8 = 46 \quad +8$

$\div 9 \quad 9x = 54 \quad \div 9$

$x = 6$

$x = 6$

.....

(2)

29 Solve $\frac{2x}{3} = 12$

$\times 3 \quad \frac{2x}{3} = 12 \quad \times 3$

$\div 2 \quad 2x = 36 \quad \div 2$

$x = 18$

$x = 18$

.....

(2)

30 Solve $\frac{3x+7}{4} = 37$

$\times 4 \left(\frac{3x+7}{4} = 37 \right) \times 4$

$-7 \left(3x + 7 = 148 \right) -7$

$\div 3 \left(3x = 141 \right) \div 3$

$x = 47$

$x = 47$

(2)

31 Find the solution to this equation when $x = 7$ *and* $y = 12$

$$3x - y + 35 =$$

$3(7) - 12 + 35 = 21 + 23$

$= 44$

44

(2)

32 Find the solution to this equation when $x = 3$ *and* $y = 2$

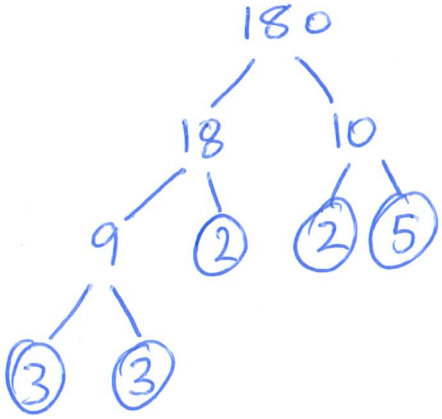
$$\frac{5x + 7y}{y} =$$

$\frac{5(3) + 7(2)}{2} = \frac{15 + 14}{2} = \frac{29}{2} = 14\frac{1}{2}$

$14\frac{1}{2}$

(2)

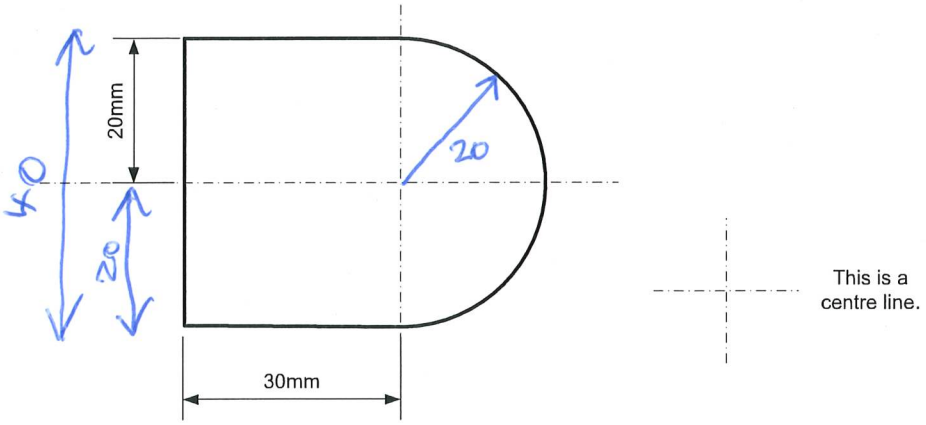
33 Write 180 as a product of its prime factors.



$2^2 \times 3^2 \times 5$

(2)

34 A shape is made from a semi-circle and an oblong.



a Find the area of the shape.

Oblong = 40×30

$= 1200 \text{ mm}^2$

Semicircle = $\frac{\pi r^2}{2}$

$= \frac{\pi \times 20^2}{2}$

$= 200\pi$

Area = $1200 + 200\pi \text{ mm}^2$

$= 1828.318531 \text{ mm}^2$

(4)

b Find the perimeter of the shape.

$20 + 20 + 30 + 30 + \frac{2\pi r}{2}$

$= 100 + 20\pi$

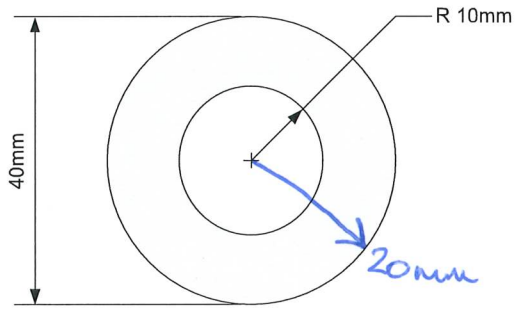
$= 162.8318531$

162.8318531 mm

(4)

35 Below is a ring.

The outer circle has a diameter of 40mm. The inner circle has a radius of 10mm.



Find the area of the shaded part of the circle. Give your answer correct to 2 decimal places.

Area = $\pi r^2_{outer} - \pi r^2_{inner}$

$= 400\pi - 100\pi$

$= 300\pi$

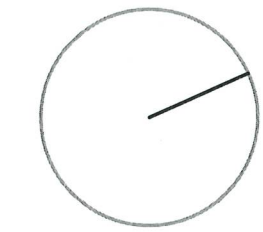
$= 942.4777961$

$\approx 942.48 \text{ mm}^2$

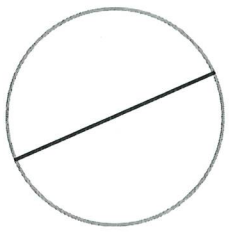
942.48 mm

(4)

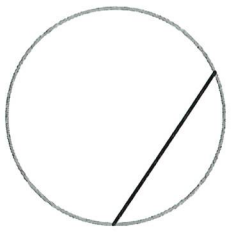
36 Name the darker lines shown below.



radius



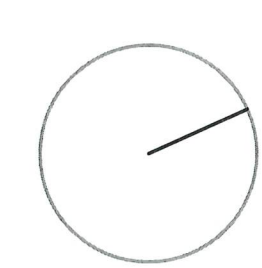
diameter



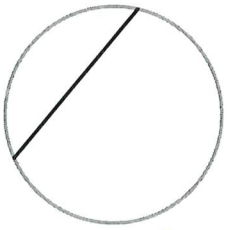
chord

(3)

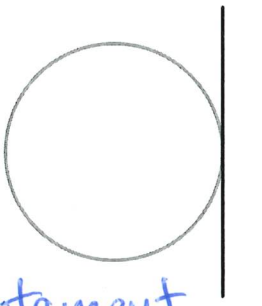
37 Name the darker lines shown below.



radius



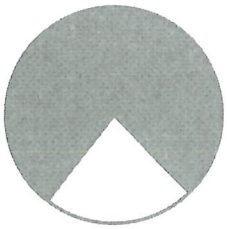
chord



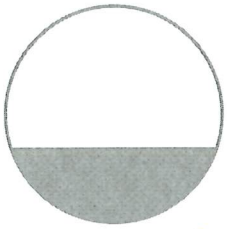
tangent

(3)

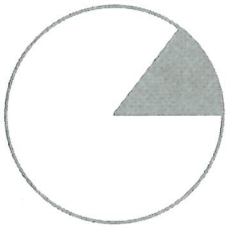
38 Name the shaded parts on the circles below.



sector



segment



sector

(3)

39 Factorise $x^2 + 6x + 8$ $= (x+2)(x+4)$

	x	$+2$
x	x^2	$+2x$
$+4$	$+4x$	$+8$

$1 \times 8 = 8$

$2 \times 4 = 8$

$2 + 4 = 6$

(3)

40 Factorise $x^2 + 6x + 8$ $= (x+4)(x+2)$

	x	$+2$
x	x^2	$+2x$
$+4$	$+4x$	$+8$

$+1 \times +8$
-1×-8
$+2 \times +4$
-2×-4

(3)

41 Factorise $x^2 - 11x + 24$ $= (x-3)(x-8)$

	x	-3
x	x^2	$-3x$
-8	$-8x$	$+24$

1×24
-1×-24
2×12
-2×-12
3×8
$-3 \times -8 = -11$
4×6
-4×-6

(3)

42 Factorise $8x + 32$

	x	$+4$
8	$8x$	$+32$

$8(x+4)$

(2)

43 Two fair 6 sided dice are thrown.

The number that is thrown on each die is multiplied by the other to get the score.

a Draw the probability sample space described above.

	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	4	6	8	10	12
3	3	6	9	12	15	18
4	4	8	12	16	20	24
5	5	10	15	20	25	30
6	6	12	18	24	30	36

← Count the number of examples that follow the rules for parts b → d.

.....

(2)

b What is $P(score < 8)$

$P(Score < 8) = \frac{16}{36} = \frac{4}{9}$

$\frac{4}{9}$

.....

(1)

c What is the $P(Score\ is\ even)$

$\frac{27}{36} = \frac{3}{4}$

$\frac{3}{4}$

.....

(1)

d What is the $P(Score\ is\ prime)$

$\frac{6}{36} = \frac{1}{6}$

$\frac{1}{6}$

.....

(1)

44 Solve the inequality $3x + 2 < 20$

$-2($ $3x + 2 < 20$ $)-2$

$\div 3($ $3x < 18$ $)\div 3$

$x < 6$

$x < 6$

(2)

45 Solve the inequality $\frac{6x-8}{5} \leq 24$

$\times 5\left(\frac{6x-8}{5} \leq 24\right)\times 5$

$+8($ $6x - 8 \leq 120$ $)+8$

$\div 6($ $6x \leq 128$ $)\div 6$

$x \leq 21\frac{1}{3}$

$x \leq 21\frac{1}{3}$

(2)

46 Solve the inequality $7x + 2 \leq 9x - 8$

$-7x($ $7x + 2 \leq 9x - 8$ $)-7x$

$+8($ $2 \leq 2x - 8$ $)+8$

$\div 2($ $10 \leq x$ $)\div 2$

Swap($5 \leq x$) Be careful of sign here

$x \geq 5$

$x \geq 5$

(2)

47 Solve the inequality $\frac{5x-3}{2} > 2x + 7$

$\times 2\left(\frac{5x-3}{2} > 2x + 7\right)\times 2$

$-4x($ $5x - 3 > 4x + 14$ $)-4x$

$+3($ $x - 3 > 14$ $)+3$

$x > 17$

$x > 17$

(2)

48 Solve by factorising $x^2 - 2x - 35 = 0$

	x	$+5$
x	x^2	$+5x$
-7	$-7x$	-35

$-7 + 5$

$x - 7 = 0$ $+7$

$x = 7$

-5 $x + 5 = 0$ -5

$x = -5$

$x = -5 \quad x = 7$

$(x - 7)(x + 5) = 0$

(3)

49 Solve by factorising $x^2 + 10x + 21 = 0$

	x	$+7$
x	x^2	$+7x$
$+3$	$+3x$	$+21$

$x + 7 = 0$ -7

$x = -7$

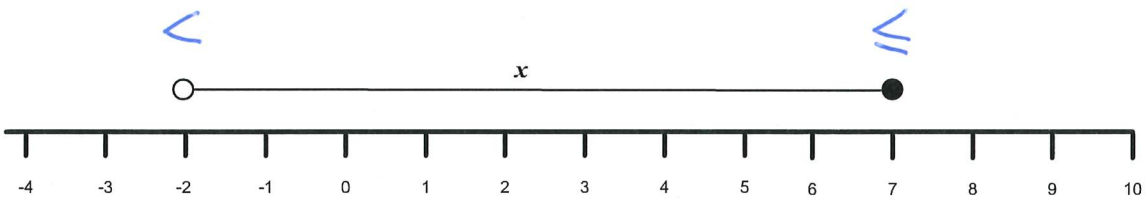
$x + 3 = 0$ -3

$x = -3$

$x = -7$ or $x = -3$

(3)

50 Write the error interval for x shown below.



$-2 < x \leq 7$

(2)

51 Find the value of T if s=-4 and y=3

$$8y - 3s = T$$

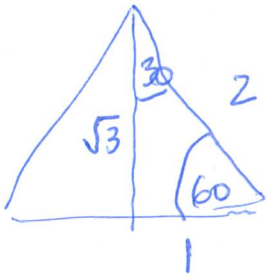
$T = 8(3) - 3(-4)$

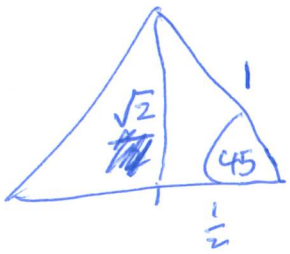
$= 24 - -12$

$= 24 + 12 = 36$

$T = 36$

(1)





52 What is the value of Sin 30°?

$S = \frac{O}{H} = \frac{1}{2}$

0.5

.....

(1)

53 What is the value of Cos 60°?

$C = \frac{A}{H} = \frac{1}{2}$

0.5

.....

(1)

54 What is the value of Cos 45°?

$C = \frac{A}{H}$

$\frac{\sqrt{2}}{2}$

.....

(1)

55 What is the value of Sin 45°?

$\frac{\sqrt{2}}{2}$

.....

(1)

56 What is the value of 17^0 ?

1

.....

(1)

57 What is the value of x^0 ?

1

.....

(1)

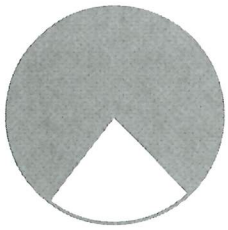
58 What is the value of 17^1 ?

17

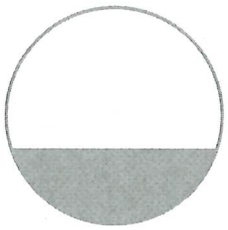
.....

(1)

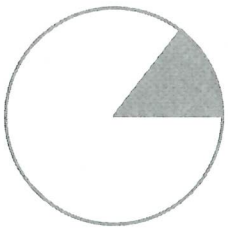
59 Name the shaded parts on the circles below.



Sector



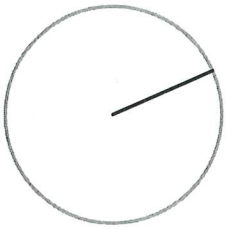
Segment



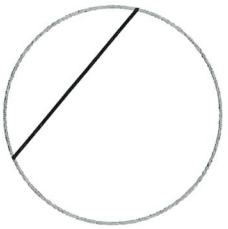
Sector

(3)

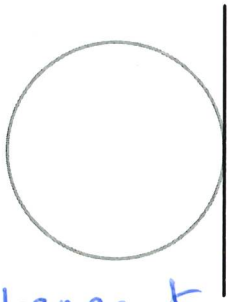
60 Name the darker lines shown below.



radius



chord



tangent

(3)

61 Two groups of children took a maths test.

Group A	20	22	13	13	16	15	6	16	16
Group B	20	21	20	13	15	16	8	7	5

a Look at group A.

i. What is the modal average for group A?

6 - 1 22 - 1
13 - 2
15 - 1
16 - 3
20 - 1

16

(1)

ii What is the median for group A?

6 13 13 15 16 16 16 20 22

16

(2)

Group A	20	22	13	13	16	15	6	16	16
Group B	20	21	20	13	15	16	8	7	5

b Look at group B.

i What is the maximum for group B?

21

(1)

ii What is the range for group B?

21 − 5 = 16

(2)

c Look at all the data in the table.

What is the mean average for all the data?

20 + 22 + 13 + 13 + 16 + 15 + 6 + 16 + 16 + 20 + 21 + 20 + 13 + 15 + 16 + 8 + 7 + 5 = 262

$\frac{262}{18} = 14\frac{10}{18} = 14\frac{5}{9}$

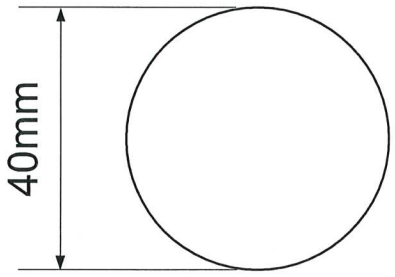
$14\frac{5}{9}$

(2)

62 Calculate the area of the following shapes

Show your working

a



radius = $\frac{40}{2}$ = 20

Area = πr^2

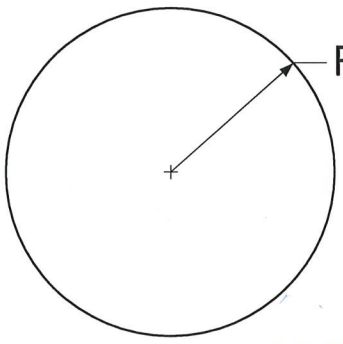
= $\pi \times 20 \times 20$

= 400π

≈ 1256.637061

$\approx 1257\ mm^2$

b



Area = πr^2

= $25^2 \times \pi$

= 625π

≈ 1963.495408

$\approx 1963\ mm^2$ (4)

$12+15+24+18+9+2=80$

63 In a club, people were asked what their favourite colour was.

The responses are shown in the table below.

Draw a pie chart to represent this information.

Favourite Colour	Frequency
Red	12
Blue	15
Green	24
Yellow	18
Pink	9
Purple	2

$\frac{360}{80} = 4.5°$ each

$12 \times 9 = 108$

$15 \times 9 = 135$

$12 \times 4.5 = 54$

$15 \times 4.5 = 67\frac{1}{2}$

$24 \times 4.5 = 108$

$18 \times 4.5 = 81$

$2 \times 4.5 = 9$

$9 \times 4.5 = 40\frac{1}{2}$

(3)

64 On a street in a town, people were stopped and asked what their favourite football team is.

The responses are shown in the table below.

Draw a pie chart to represent this information.

$\frac{360}{90} = 4$

Favourite Team	Frequency	
Arsenal	8	32
Chelsea	6	24
Leeds United	25	100
Liverpool	14	56
Manchester Utd	7	28
Newcastle Utd	30	120
		90

(3)

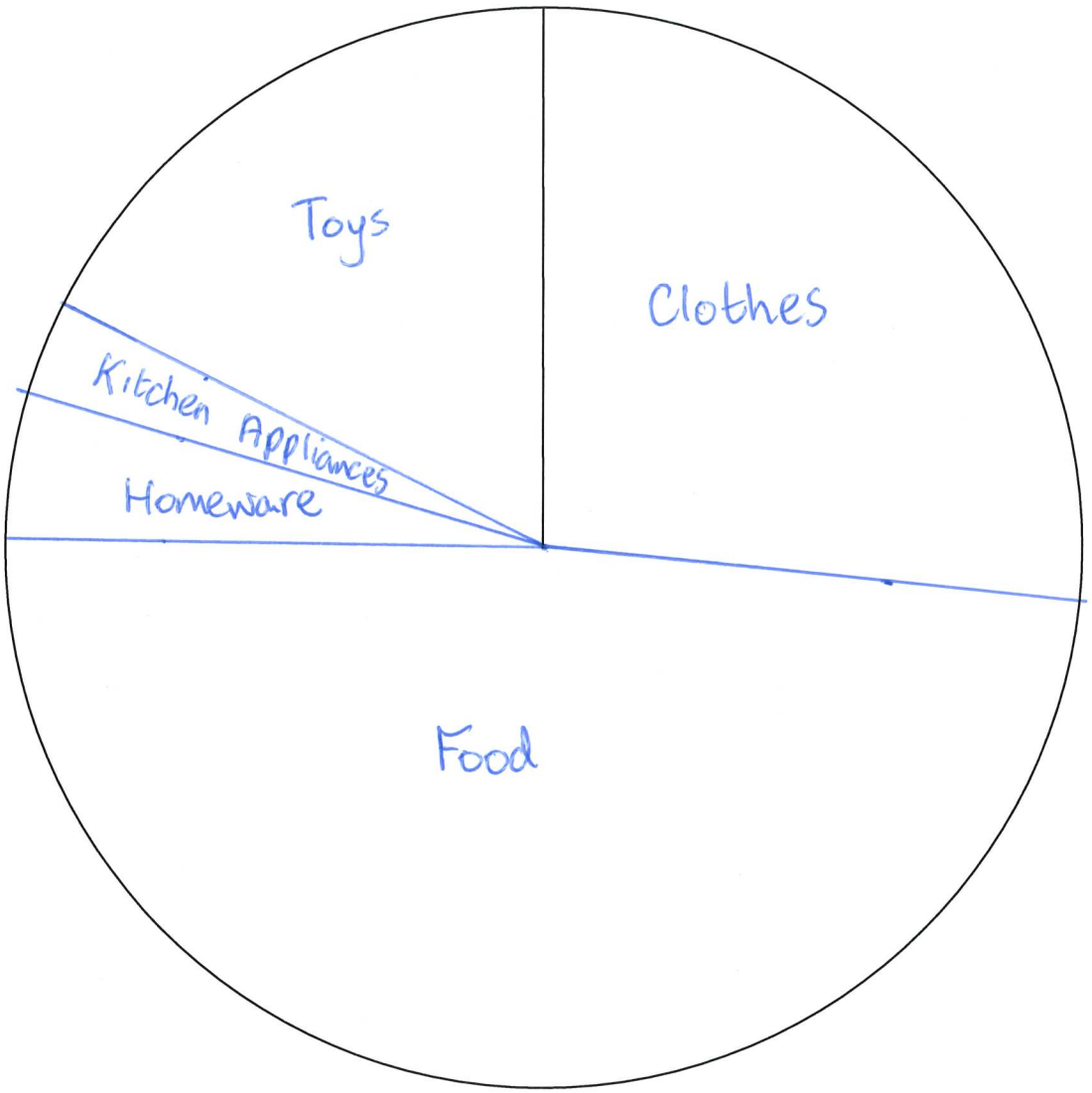
65 A shop looked at the different types of products it was selling.

The information is shown in the table below.

Draw a pie chart to represent this information.

$\frac{360}{72} = 5$

Product	Frequency of sale	
Clothes	19	95
Food	35	175
Homeware	3	15
Kitchen Appliances	2	10
Toys	13	65
	72	



(3)