



Key Stage 3

Mathematics
Home learning pack

[illegible]

Key:

Green	10
Orange	11
Pink	12
Purple	13
Blue	14
Yellow	15

Secondary

Key:

Green	4
Orange	5
Pink	6
Purple	7
Blue	8
Yellow	10

Secondary

Coordinates

Instructions:

Draw coordinate axes from $-10 \leq x \leq 10$ and $-10 \leq y \leq 11$.

Plot each pair of coordinates in order, joining them up with a straight line as you go along. Then colour each section in the given colour.

White

Start: (1, -8), (1, -10), (-1, -10), (-1, -8), (1, -8), End

Start: (2.5, 0.5), (2, 1), (1.5, 0.5), (1, 1), (2, 2), (3, 1), (2.5, 0.5), End

Start: (-2.5, 0.5), (-2, 1), (-1.5, 0.5), (-1, 1), (-2, 2), (-3, 1), (-2.5, 0.5), End

Pink

Start: (1, -3), (1.5, -3.5), (1.5, -4.5), (0, -6), (-1.5, -4.5), (-1.5, -3.5), (-1, -3), (1, -3), End

Start: (3, 9), (3.5, 8), (3, 6), (2.5, 8), (3, 9), End

Start: (-3, 9), (-3.5, 8), (-3, 6), (-2.5, 8), (-3, 9), End

Black

Start: (2.5, 0.5), (2, 1), (1.5, 0.5), (2, 0), (2.5, 0.5), End

Start: (-2.5, 0.5), (-2, 1), (-1.5, 0.5), (-2, 0), (-2.5, 0.5), End

Grey

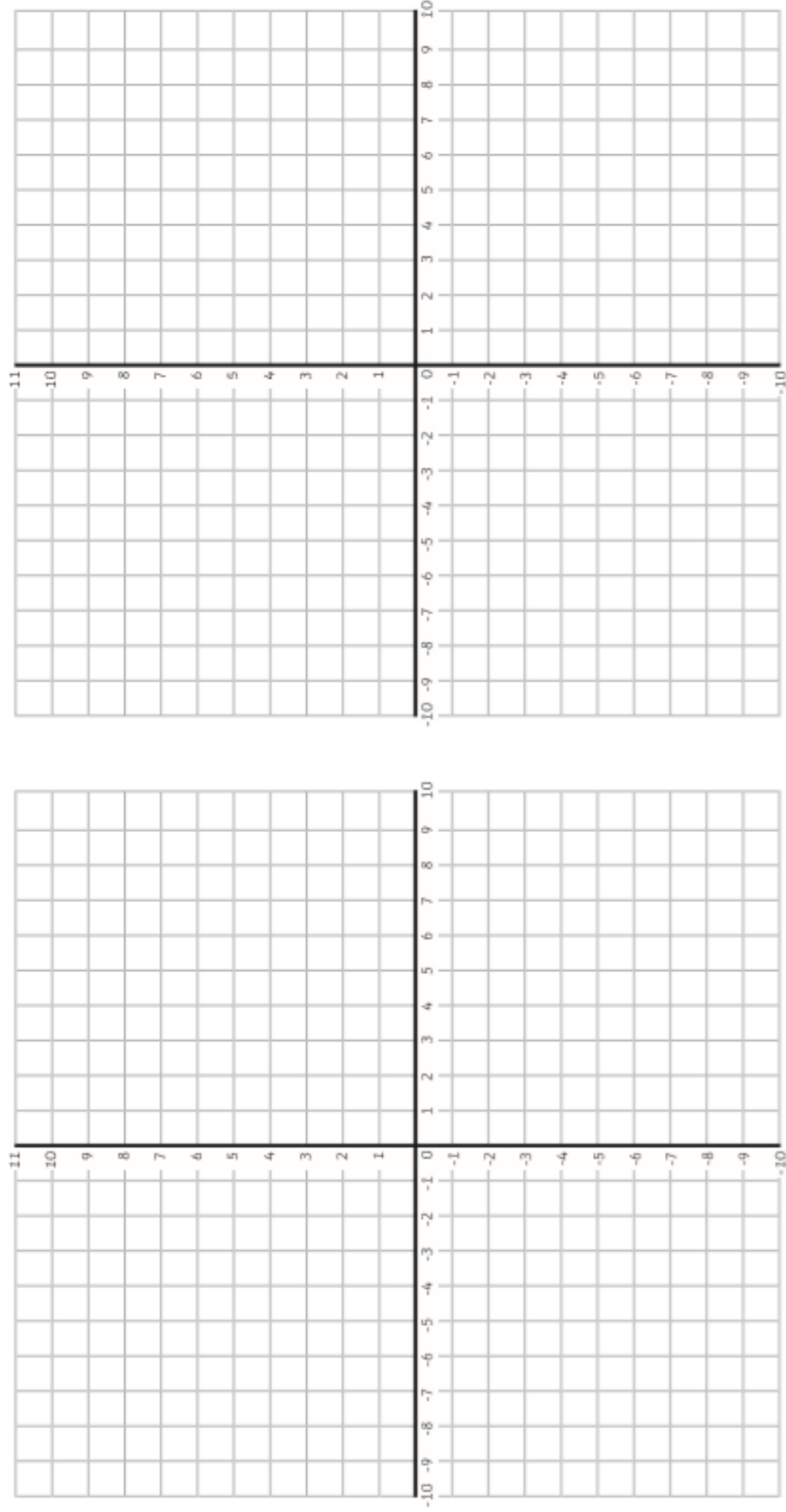
Start: (1, -9), (2, -8.5), (3, -9), (4, -8.5), (5, -8), (7, -6), (7, -3), (6, -2), (4.5, 1), (4.5, 3), (3, 5), (0, 6.5), (-3, 5), (-4.5, 3), (-4.5, 1), (-6, -2), (-7, -3), (-7, -6), (-5, -8), (-4, -8.5), (-3, -9), (-2, -8.5), (-1, -9), End

Start: (3.5, 4.5), (4, 7), (4, 9), (3.5, 10), (3, 11), (2, 9), (2, 5.5), End

Start: (-3.5, 4.5), (-4, 7), (-4, 9), (-3.5, 10), (-3, 11), (-2, 9), (-2, 5.5), End

Dark Grey

Start: (2, 5.5), (1, 4), (-1, 4), (-2, 5.5), End



Comparing decimals

Section A

Statement	True or False
$3 < 8$	
$2 > 10$	
$11 < 4$	
$4 > 3$	
$6 < 9$	
$13 < 14$	

Statement	True or False
$3 > 0$	
$6 > 2$	
$1 > 3$	
$6 < 2$	
$5 > 6$	
$0 < 10$	

Section B

Statement	True or False
$5.7 < 5.2$	
$4.9 > 4.1$	
$9.0 > 9.3$	
$8.4 < 4.8$	
$7.6 < 7.6$	
$7.2 > 7.0$	

Statement	True or False
$0.3 < 0.5$	
$0.6 > 0.7$	
$0.05 < 0.06$	
$0.35 > 0.3$	
$0.62 < 0.6$	
$0.01 < 0.1$	

Section C

Statement	True or False
$152.7 < 105.3$	
$25.9 > 56.7$	
$70.12 > 70.36$	
$5.42 < 4.57$	
$0.53 < 0.71$	
$0.24 < 0.78$	

Statement	True or False
$6.42 > 6.24$	
$71.17 > 71.71$	
$0.83 < 0.38$	
$0.41 > 0.14$	
$0.6 < 0.7$	
$0.554 > 0.545$	

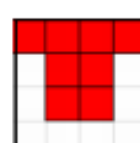
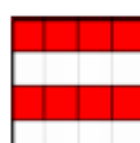
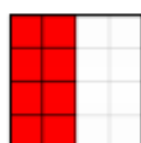
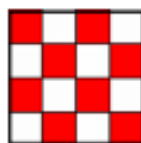
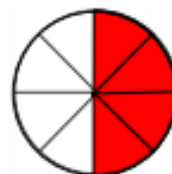
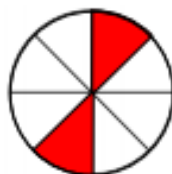
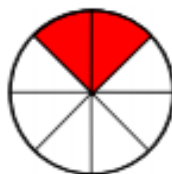
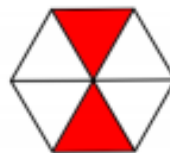
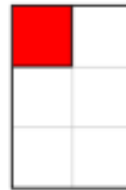
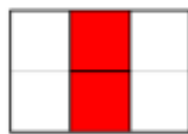
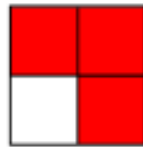
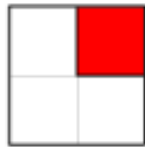
Section D

Statement	True or False
$0.5 \underline{\hspace{1cm}} 0.6$	True
$1.3 \underline{\hspace{1cm}} 1.4$	True
$2.11 \underline{\hspace{1cm}} 2.09$	True
$0.25 \underline{\hspace{1cm}} 0.23$	True
$0.46 \underline{\hspace{1cm}} 0.47$	True
$0.031 \underline{\hspace{1cm}} 0.032$	True
$0.776 \underline{\hspace{1cm}} 0.775$	True

Statement	True or False
$0.98 \underline{\hspace{1cm}} 0.951$	False
$2.222 \underline{\hspace{1cm}} 2.002$	True
$3.09 \underline{\hspace{1cm}} 9.03$	False
	True
	True
	False
	False

Fractions

Section A: Tick the diagrams which show fractions equivalent to $\frac{1}{2}$



Write all the fractions above equivalent to $\frac{1}{2}$

What do you notice?

Division

1) $9 \div 3 =$

2) $8 \div 4 =$

3) $12 \div 6 =$

4) $10 \div 5 =$

5) $6 \div 2 =$

6) $14 \div 7 =$

7) $11 \div 1 =$

8) $8 \div 2 =$

9) $5 \div 5 =$

10) $12 \div 4 =$

11) $14 \div 2 =$

12) $16 \div 8 =$

13) $27 \div 9 =$

14) $20 \div 4 =$

15) $5 \div 5 =$

16) $18 \div 2 =$

17) $24 \div 6 =$

18) $21 \div 7 =$

19) $32 \div 8 =$

20) $36 \div 3 =$

21) $27 \div 3 =$

22) $28 \div 4 =$

23) $11 \div 1 =$

24) $1 \div 1 =$

25) $15 \div 3 =$

26) $40 \div 5 =$

27) $9 \div 3 =$

28) $40 \div 8 =$

29) $24 \div 4 =$

30) $18 \div 9 =$

31) $12 \div 1 =$

32) $33 \div 3 =$

33) $30 \div 3 =$

34) $49 \div 7 =$

35) $44 \div 4 =$

36) $36 \div 9 =$

37) $3 \div 3 =$

38) $36 \div 6 =$

39) $48 \div 4 =$

40) $2 \div 2 =$

41) $10 \div 1 =$

42) $9 \div 1 =$

43) $12 \div 4 =$

44) $55 \div 11 =$

45) $70 \div 10 =$

46) $60 \div 5 =$

47) $27 \div 3 =$

48) $84 \div 12 =$

49) $24 \div 4 =$

50) $40 \div 10 =$

51) $54 \div 6 =$

52) $36 \div 4 =$

53) $60 \div 5 =$

54) $99 \div 11 =$

55) $108 \div 12 =$

56) $56 \div 7 =$

57) $64 \div 8 =$

58) $63 \div 9 =$

59) $121 \div 11 =$

60) $9 \div 3 =$

61) $144 \div 12 =$

62) $72 \div 9 =$

63) $132 \div 11 =$

64) $72 \div 8 =$

65) $110 \div 11 =$

66) $120 \div 10 =$

67) $96 \div 12 =$

68) $48 \div 4 =$

69) $36 \div 9 =$

70) $56 \div 8 =$

71) $84 \div 7 =$

72) $18 \div 1 =$

73) $11 \div 11 =$

74) $48 \div 12 =$

75) $30 \div 15 =$

76) $10 \div 10 =$

77) $26 \div 13 =$

78) $77 \div 11 =$

79) $45 \div 15 =$

80) $50 \div 25 =$

81) $60 \div 20 =$

82) $24 \div 12 =$

83) $121 \div 11 =$

84) $130 \div 10 =$

85) $72 \div 12 =$

86) $66 \div 11 =$

87) $120 \div 10 =$

88) $100 \div 20 =$

89) $100 \div 25 =$

90) $100 \div 50 =$

Colourful Equivalences

Section A: Colour three boxes in each grid which show a fraction, decimal and percentage that are all equivalent to each other.

$\frac{25}{10}$	25%	$\frac{1}{4}$
0.25	2%	20%

0.5	$\frac{1}{2}$	2%
50%	$\frac{1}{5}$	22%

$\frac{1}{4}$	75%	$\frac{3}{4}$
0.75	$\frac{5}{7}$	0.57

$\frac{1}{10}$	0.1	$\frac{1}{100}$
1.1	11%	10%

0.3	0.13	30%
$\frac{1}{30}$	$\frac{3}{10}$	33%

$\frac{7}{10}$	70%	0.07
0.7	$\frac{7}{15}$	57%

$\frac{9}{10}$	90%	9%
0.9	$\frac{99}{100}$	0.19

$\frac{1}{100}$	1%	$\frac{1}{10}$
0.01	1.1	11%

$\frac{4}{10}$	4%	$\frac{44}{100}$
$\frac{4}{100}$	0.04	0.4

$\frac{1}{5}$	20%	$\frac{2}{100}$
0.02	$\frac{2}{5}$	0.2

40%	44%	$\frac{2}{5}$
0.4	0.04	$\frac{1}{40}$

$\frac{3}{5}$	0.6	$\frac{1}{6}$
0.06	60%	16%

Section B: Make up your own!

Fractions, Decimal & Percentages #1

Convert the fractions, decimals and percentages.

Decimal	Percentage
0.1	
0.2	
0.3	
0.4	
0.5	
0.6	
0.7	
	90 %
	1 %
	2 %
	8 %

Decimal	Fraction
0.1	
0.3	
0.7	
0.9	
0.5	
0.2	
0.6	
0.8	
	$\frac{1}{2}$
	$\frac{1}{4}$
	$\frac{3}{4}$

Percentage	Decimal
10 %	
20 %	
70 %	
90 %	
50 %	
25 %	
75 %	
1 %	
3 %	
8 %	
2 %	

Percentage	Decimal
15 %	
27 %	
71 %	
94 %	
4 %	
6 %	
5 %	
16 %	
54 %	
7 %	
12.5 %	

Simplifying Ratios

Section A

<i>Ratio</i>	<i>Rule</i>	<i>Simplified</i>
2 : 4	$\div 2$	
8 : 10	$\div 2$	
6 : 2	$\div 2$	
12 : 2	$\div 2$	
14 : 10	$\div 2$	
18 : 2	$\div 2$	

Section B

<i>Ratio</i>	<i>Rule</i>	<i>Simplified</i>
5 : 10	$\div 5$	
15 : 10	$\div 5$	
25 : 5	$\div 5$	
10 : 35	$\div 5$	
45 : 5	$\div 5$	
55 : 25	$\div 5$	

Section C

<i>Ratio</i>	<i>Rule</i>	<i>Simplified</i>
6 : 3	$\div 3$	
3 : 9	$\div 3$	
9 : 12	$\div 3$	
12 : 15	$\div 3$	
30 : 3	$\div 3$	
18 : 33	$\div 3$	

Section D

<i>Ratio</i>	<i>Rule</i>	<i>Simplified</i>
12 : 2	$\div 2$	
6 : 15	$\div 3$	
10 : 15	$\div 5$	
30 : 40	$\div 10$	
12 : 16	$\div 4$	
24 : 2	$\div 2$	

Multiplying & Dividing by 10

Section A

- 1) $85 \times 10 =$
- 2) $13 \times 10 =$
- 3) $123 \times 10 =$
- 4) $452 \times 10 =$
- 5) $801 \times 10 =$

- 6) $4.1 \times 10 =$
- 7) $5.2 \times 10 =$
- 8) $2.7 \times 10 =$
- 9) $9.4 \times 10 =$
- 10) $70.3 \times 10 =$

- 11) $55.6 \times 10 =$
- 12) $27.4 \times 10 =$
- 13) $86.5 \times 10 =$
- 14) $102.1 \times 10 =$
- 15) $732.7 \times 10 =$

Section B

- 1) $4.15 \times 10 =$
- 2) $6.19 \times 10 =$
- 3) $8.01 \times 10 =$
- 4) $2.32 \times 10 =$
- 5) $1.19 \times 10 =$

- 6) $19.11 \times 10 =$
- 7) $87.02 \times 10 =$
- 8) $53.97 \times 10 =$
- 9) $36.45 \times 10 =$
- 10) $443.62 \times 10 =$

- 11) $778.15 \times 10 =$
- 12) $219.23 \times 10 =$
- 13) $400.82 \times 10 =$
- 14) $524.07 \times 10 =$
- 15) $501.99 \times 10 =$

Section C

- 1) $16 \times 10 =$
- 2) $8.07 \times 10 =$
- 3) $12.1 \times 10 =$
- 4) $94 \times 10 =$
- 5) $3 \times 10 =$

- 6) $2.8 \times 10 =$
- 7) $10.71 \times 10 =$
- 8) $34 \times 10 =$
- 9) $9021 \times 10 =$
- 10) $3.05 \times 10 =$

- 11) $206.06 \times 10 =$
- 12) $9.71 \times 10 =$
- 13) $9.7 \times 10 =$
- 14) $112.8 \times 10 =$
- 15) $0.08 \times 10 =$

Section D

- 1) $60 \div 10 =$
- 2) $70 \div 10 =$
- 3) $30 \div 10 =$
- 4) $250 \div 10 =$
- 5) $740 \div 10 =$

- 6) $41 \div 10 =$
- 7) $84 \div 10 =$
- 8) $25 \div 10 =$
- 9) $82 \div 10 =$
- 10) $99 \div 10 =$

- 11) $149 \div 10 =$
- 12) $604 \div 10 =$
- 13) $728 \div 10 =$
- 14) $113 \div 10 =$
- 15) $919 \div 10 =$

Section E

- 1) $7 \div 10 =$
- 2) $9 \div 10 =$
- 3) $3 \div 10 =$
- 4) $6 \div 10 =$
- 5) $5 \div 10 =$

- 6) $6.1 \div 10 =$
- 7) $5.3 \div 10 =$
- 8) $2.8 \div 10 =$
- 9) $4.62 \div 10 =$
- 10) $8.337 \div 10 =$

- 11) $85.4 \div 10 =$
- 12) $97.3 \div 10 =$
- 13) $11.9 \div 10 =$
- 14) $73.01 \div 10 =$
- 15) $140.12 \div 10 =$

Section F

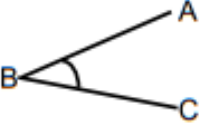
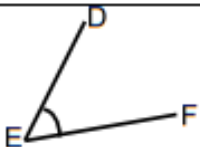
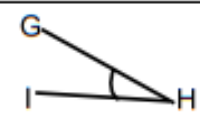
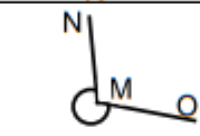
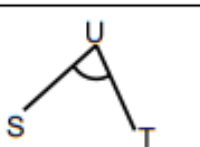
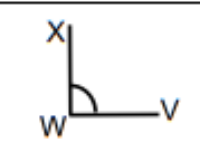
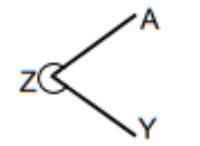
- 1) $24 \div 10 =$
- 2) $8 \div 10 =$
- 3) $4.5 \times 10 =$
- 4) $0.4 \times 10 =$
- 5) $19 \div 10 =$

- 6) $6153 \times 10 =$
- 7) $24 \div 10 =$
- 8) $12.98 \times 10 =$
- 9) $533 \div 10 =$
- 10) $57.1 \div 10 =$

- 11) $9.003 \times 10 =$
- 12) $408.9 \times 10 =$
- 13) $461 \div 10 =$
- 14) $29 \div 10 =$
- 15) $0.03 \times 10 =$

Describing Angles

Section A

Angle	Estimate	Type	Description
	35°	ACUTE	$\angle ABC$
			
			
			
			
			
			
			
			
			

Angle	Estimate	Type	Description
	70°		$\angle ABC$
	90°		$\angle GTH$
	100°		$\angle JKZ$
	175°		$\angle MWQ$
	190°		$\angle DVB$
	300°		$\angle ASU$
	20°		$\angle GJL$
	350°		$\angle IER$
	15°		$\angle FQO$
	200°		$\angle HTY$

Negative Number Multiplication Grids

Section A

x	8	-3	7	-4
5	40			
-6		18		
4				-16
-11				-77

x	-7	3	1	-4
-2				
8				
-9				
10				

x	-5	4	-9	2
-2				
-3				
-7				
6				

x	7	-9	4	-3
1				
6				
-5				
-8				

x	8	-2	-7	9
12				
-5				
-11				
-8				

x	-5	4	-9	2
-2				
-3				
-7				
6				

Section B

x	-8	6	7	-4
	-24	18	21	-12
	-8	6	7	-4
	56	-42	-49	28
	-72	54	63	-36

x				
-3	-9	24	-6	36
-8	-24	64	-16	96
-2	-6	16	-4	24
-12	-36	96	-24	144

x	6	-4	8	
	54	-36	72	-63
	-12	8	-16	14
	42	-28	56	-49
	-24	16	-32	28

x				
	-14	18	22	8
	63	-81	-99	-36
	21	-27	-33	-12
	-70	90	110	40

x				
	-10	22	-20	14
	60	-132	120	-84
	-25	55	-50	35
	-35	77	-70	49

x				
	12	-18	24	-36
	-20	30	-40	60
	-28	42	-56	84
	36	-54	72	-108

Section C

x	4	-9		
	-8	18		
-3		-12		
	35			-14
				12

x	-7			
	24	-14	8	-18
7		-49		
4		-28	16	
	-36			

x	-9	-11		
-2				22
5		-35	-45	
	-48		54	
-7		49		

Fractions, Decimal & Percentages #2

Convert the fractions, decimals and percentages.

Decimal	Percentage
0.11	
0.03	
0.2	
0.14	
0.05	
0.67	
0.01	
0.82	
0.02	
0.7	
0.59	

Decimal	Fraction
0.5	
0.25	
0.75	
0.3	
0.7	
0.17	
0.23	
0.29	
0.8	
0.2	
0.6	

Percentage	Decimal
42 %	
6 %	
79 %	
3 %	
94 %	
5 %	
72 %	
1 %	
36 %	
8 %	
27 %	

Percentage	Fraction
25 %	
75 %	
50 %	
19 %	
9 %	
37 %	
1 %	
20 %	
40 %	
60 %	
8 %	

Multiplying & Dividing by Powers of 10

Section A

X	2	15	38	720
10				

X	3	17	42	514
100				

X	8	19	58	645
1000				

X	4	4.1	4.8	4.5
10				

X	2	2.5	2.9	2.7
100				

X	9	9.4	9.5	9.9
1000				

X	12	12.7	12.1	12.15
10				

X	81	8.1	8.14	8.145
100				

X	7	7.6	7.62	720
1000				

Section B

- 1) $60 \div 10 =$
- 2) $70 \div 10 =$
- 3) $3 \div 10 =$
- 4) $2 \div 10 =$
- 5) $46 \div 10 =$

- 6) $4000 \div 100 =$
- 7) $360 \div 100 =$
- 8) $209 \div 100 =$
- 9) $58 \div 100 =$
- 10) $92 \div 100 =$

- 11) $5000 \div 1000 =$
- 12) $7000 \div 1000 =$
- 13) $48000 \div 1000 =$
- 14) $2100 \div 1000 =$
- 15) $6900 \div 1000 =$

Section C

X	7	62	18	0.9
10				
100				
1000				

X	5	13	97	0.6
10				
100				
1000				

X	0.4	1.5	53.6	8.99
10				
100				
1000				

X				0.03
10	30			
100		700		
1000			4000	

X				0.06
10	85			
100		720		
1000			9100	

X	0.11			
10				5
100			70	
1000		324		

Section D

- 1) $39 \div 10 =$
- 2) $82 \div 100 =$
- 3) $3.8 \times 10 =$
- 4) $0.4 \times 1000 =$
- 5) $19 \div 10 =$

- 6) $6153 \times 10 =$
- 7) $24 \div 100 =$
- 8) $0.7 \times 100 =$
- 9) $904 \div 1000 =$
- 10) $18 \div 10 =$

- 11) $5.072 \times 1000 =$
- 12) $7685 \times 10 =$
- 13) $2630 \div 100 =$
- 14) $2112 \div 1000 =$
- 15) $0.3 \times 10 =$



Adding and Subtracting Decimals

Section A

$$\begin{array}{r} 1) \quad 3.7 \\ + 8.5 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 2) \quad 24.4 \\ + 7.7 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 3) \quad 85.8 \\ + 46.9 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 4) \quad 39.02 \\ + 84.1 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 5) \quad 55.6 \\ + 7.12 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 6) \quad 9.2 \\ - 4.6 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 7) \quad 88.5 \\ - 5.8 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 8) \quad 909.4 \\ - 89.7 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 9) \quad 53.18 \\ - 7.069 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 10) \quad 284.61 \\ - 35.9 \\ \hline \hline \end{array}$$

Section B

$$1) \quad 8.6 + 5.9 =$$

$$2) \quad 11.9 + 7.48 =$$

$$3) \quad 94.57 + 33.2 =$$

$$4) \quad 9.2 - 7.9 =$$

$$5) \quad 53.8 - 19.06 =$$

$$6) \quad 70.94 - 48.4 =$$

$$7) \quad 8.4 + 9.6 - 5.3 =$$

$$8) \quad 16.08 - 7.8 + 9.24 =$$

$$9) \quad 66.33 - 25.1 + 7.49 =$$

Section C

- 1) Stanley stacks three books on top of each other. The first book is 2.5 cm thick, the second book is 1.82 cm thick and the third book is 0.9 cm thick. How tall is the stack of books?
- 2) A family of four each take baggage with them on holiday. The baggage allowance per family is 91.2 kg. Jackson's baggage weighs 21.8 kg and his sister's baggage weighs 31.24 kg. Jackson's father's baggage weighs 19.03 kg and his mother's baggage weighs 39.59 kg.
 - a) How much have the family exceeded the baggage allowance by?
 - b) Work out the total baggage allowance for 5 families.

How confidently can
you add and subtract
decimals?



Not confident



Fairly confident



Very confident

Your Score



Multiplying Decimals (A)

Section A: Answer these questions as quickly as you can.

0.6×10

$91 \div 10$

40.8×10

$875 \div 10$

Section B

$$\begin{array}{r} 1) \quad 27 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 2) \quad 84 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 3) \quad 62 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 4) \quad 108 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 5) \quad 639 \\ \times 8 \\ \hline \end{array}$$

Section C

1) $3 \times 0.4 =$

2) $9 \times 0.7 =$

3) $8 \times 0.2 =$

4) $0.6 \times 4 =$

5) $4 \times 1.9 =$

6) $5 \times 2.7 =$

7) $6 \times 3.8 =$

8) $9.3 \times 2 =$

9) $7 \times 16.2 =$

10) $13.9 \times 8 =$

11) $4 \times 57.4 =$

12) $36.4 \times 7 =$

Section D

- 1) Daniel wants to lose 1.2 kg each week before his competition. His competition is in 9 weeks. How much weight does Daniel want to lose in total?
- 2) Anita has £1.55. She wants to buy 6 apples which cost £0.30 each.
 - a) Does she have enough money?
 - b) How much more money does she need to buy 10 apples?

How confidently can you multiply decimals (to one decimal place) and whole numbers?



Not confident



Fairly confident



Very confident

Your Score



Prime Numbers

Section A: Circle all the prime numbers listed below.

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	21	27	30	33	43	49	81	89

Section B: Write down all the prime numbers in between the numbers shown.

20 30 40

Section C: Some square numbers are the sum of two prime numbers.
Fill in the missing gaps using only prime numbers.

$4 = \square + \square$ $9 = \square + \square$ $16 = \square + \square$
 $25 = \square + \square$ $36 = \square + \square$ $49 = \square + \square$

Lola says that $121 = 2 + 119$. Is she correct?

Extension

Perfect numbers equal to the sum of all its factors (not including itself). Fill in the missing numbers.

$6 = \square + \square + \square$ $28 = \square + \square + \square + \square + \square$

How confidently can you identify prime numbers?



Not confident



Fairly confident



Very confident

Your Score

Alternate & Corresponding Angles

Section A: In each diagram identify one pair of corresponding angles.

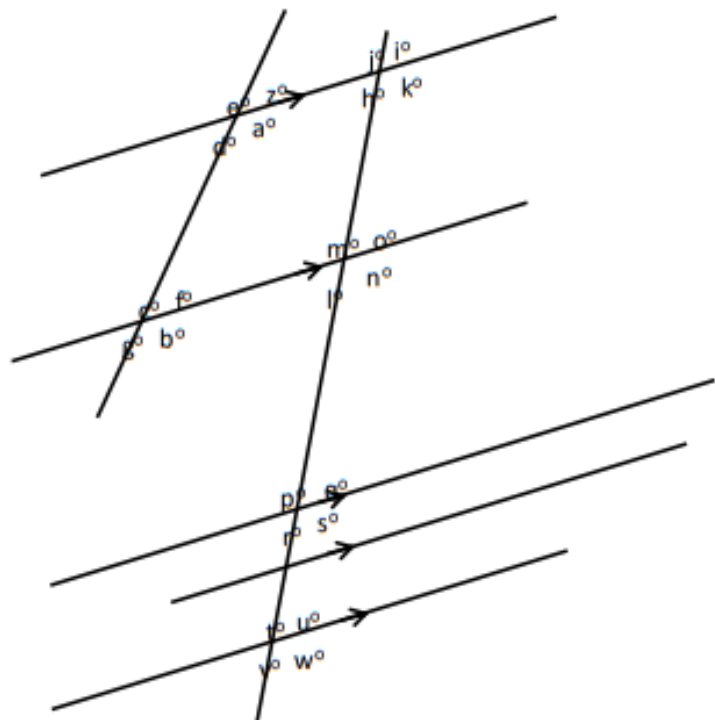


Section B: In each diagram identify one pair of alternate angles.



Section C: List pairs of corresponding and alternate angles in the table.

Corresponding Angles	Alternate Angles
a° and b°	a° and c°



L5

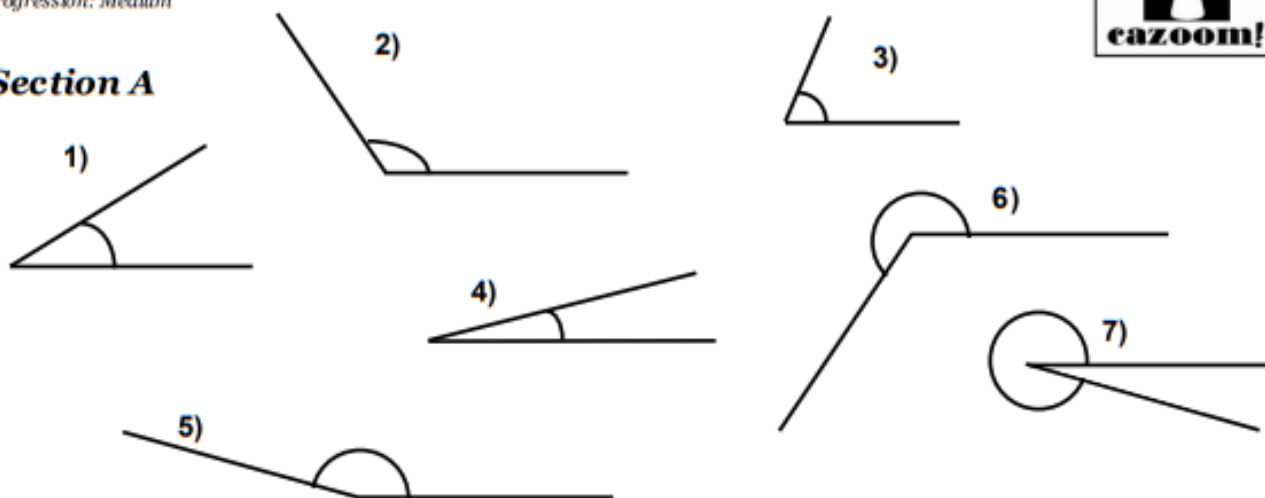
Grade : 2

Progression: Medium

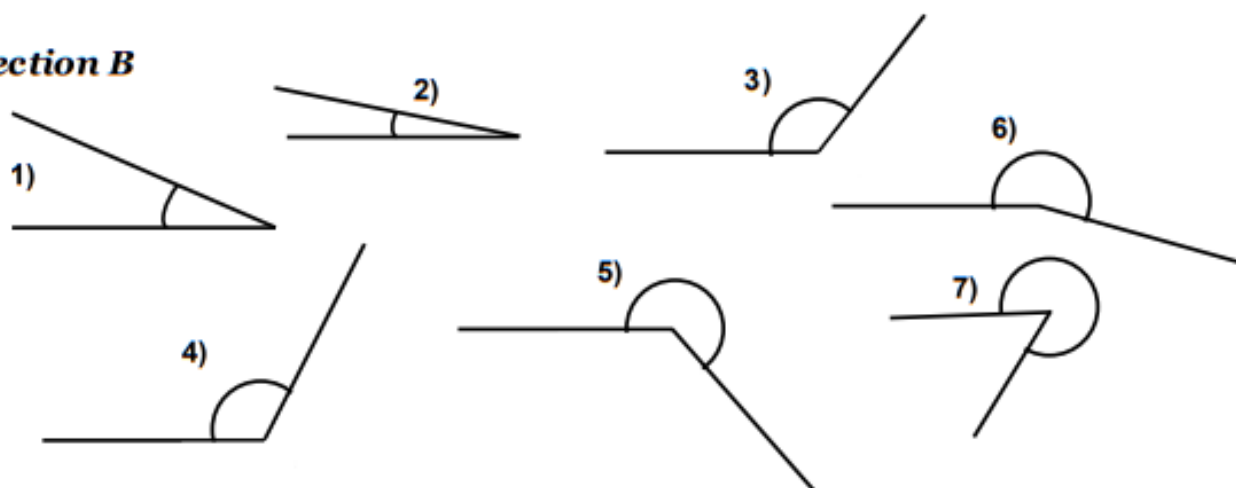
Drawing and Measuring Angles



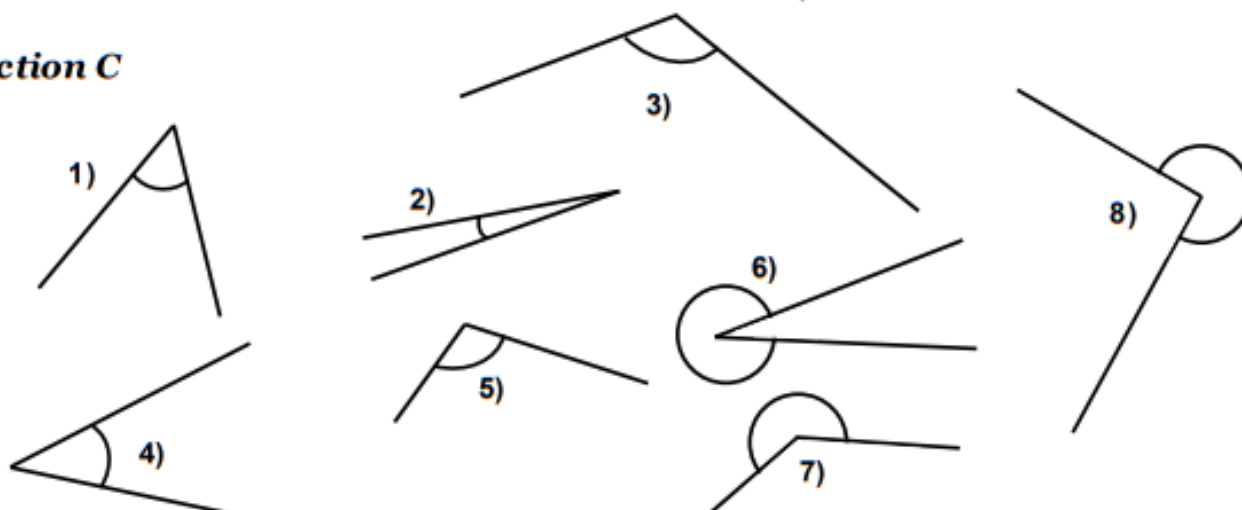
Section A



Section B



Section C



Section D: Draw the following angles:

- | | | | |
|---------------|----------------|----------------|-----------------|
| 1) 15° | 4) 95° | 7) 200° | 10) 196° |
| 2) 34° | 5) 145° | 8) 280° | 11) 283° |
| 3) 67° | 6) 171° | 9) 300° | 12) 317° |

Percentages

1

Write down the decimal equivalent to:

- a) 25%.
- b) 18%.
- c) 40%.
- d) 2%.
- e) 0.15%.

2

Write down the decimal multiplier you would use to:

- a) Increase a number by 22%.
- b) Decrease a number by 30%.
- c) Decrease a number by 61%.
- d) Increase a number by 2%.
- e) Decrease a number by 1.5%.

3

Find the percentages of amounts using a decimal multiplier. Show your working.

- a) 25% of \$240.
- b) 13% of 80kg.
- c) 7% of 232ml.
- d) 7.5% of \$240.
- e) 0.3% of 40km.

4

Use a decimal multiplier to find the new prices after the percentage increase or decrease. Show your working.

- a) Increase \$40 by 35%.
- b) Decrease \$17 by 20%.
- c) Increase \$350 by 33%.
- d) Decrease \$212 by 2%
- e) Increase \$30 by 1%.
- f) Decrease \$150 by 0.3%.

Money Problems

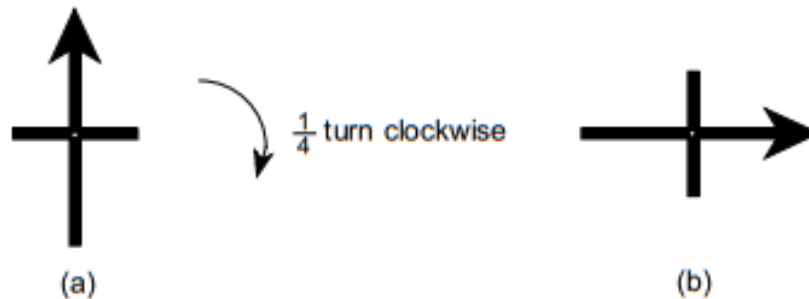
L.3

- 1) Jenny goes to the local shop. She buys a bottle of milk for 42p, a comic for 48p and a packet of sweets for 62p.
 - a) How much did she spend altogether?
 - b) She paid with a £2 coin. How much change did she get?
- 2) In the supermarket a loaf of bread costs 37p. How many loaves can David buy with a £2 coin? How much money will be left over?
- 3) The single train fare from Gary's home into the centre of town is £1.90. The single train fare from town back to Gary's is also £1.90.
 - a) How much does Gary pay altogether if he goes to town and back?
The next week Gary buys a return fare for £3.20. This gets Gary into town and back out again.
 - b) If he pays with a £10 note what change will he get?
 - c) He says "It is cheaper to buy a return ticket than two single tickets". How much will he save by buying a return?
- 4) Graham writes out a cheque for sixty three pounds and sixteen pence. How did he write this amount in figures?
- 5) Abigail has to write a cheque. She writes the amount in words 'Three hundred and fifty six pounds, twenty four pence'. Write down this amount in figures.
- 6) Susan has £10.25. She wants to buy 5 Christmas presents. She spends the same amount of money on each present. How much does she spend on each present?
- 7) Paula buys cinema tickets. They cost £5.50 each. How many can she buy with a £20 note, and how much money will be left over?
- 8) How many chocolate bars costing 27p each can be bought for £5? How much money will be left over?
- 9) Ranjit goes to the cinema. He buys a ticket for £4.25 and popcorn for £1.30. His bus fare costs £1.40 and he buys a drink for 76p when he leaves the cinema.
If he leaves home with a £10 note, how much change does he return with?
- 10) Eileen goes to the supermarket. She buys 4 tins of beans costing 32p each, 7 oranges costing 18p each, 2 packets of frozen peas costing 78p each and 3 bottles of cola costing 45p each.
 - a) What was the total cost of these items?
 - b) In her purse she had a £10 note, one £2 coin, four £1 coins, three 20p coins and four 5p coins. If she gave the correct money, which coins did she use?

Turning

L.3

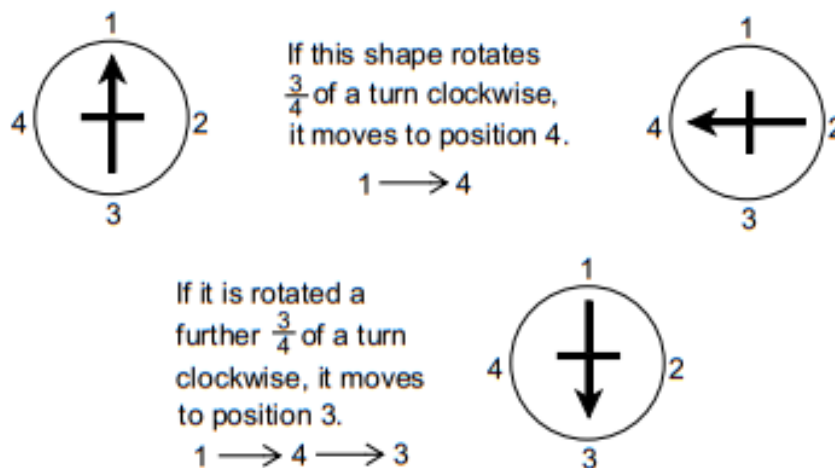
1)



Draw the shape that diagram (a) will look like when it is rotated

- (i) $\frac{1}{4}$ of a turn anticlockwise
- (ii) $\frac{1}{2}$ of a turn anticlockwise
- (iii) $\frac{1}{2}$ of a turn clockwise
- (iv) $\frac{3}{4}$ of a turn clockwise
- (v) $1\frac{1}{4}$ turns anticlockwise

2)



a) Continue this number sequence for $\frac{3}{4}$ of a turn clockwise until you reach position 4 again

b) This number sequence begins at position 2.

$2 \longrightarrow 1 \longrightarrow 4$

What kind of turn does it describe?

c) What is the number sequence for $1\frac{1}{4}$ turns clockwise, starting at position 1?

d) What is the number sequence for $1\frac{3}{4}$ turns anticlockwise starting at position 3?

Measurements

L.3

Exercise 1

In each case, say which of the three alternatives is true.

- 1) The distance from London to Manchester is - a) 320 metres b) 320 centimetres
c) 320 kilometres
- 2) The height of a house is - a) 10 metres b) 10 centimetres c) 10 millimetres
- 3) The weight of a book is - a) 1 gram b) 1 kilogram c) 1 milligram
- 4) A large bottle of cola holds - a) 2 litres b) 2 millilitres c) 20 millilitres
- 5) The weight of a man is - a) 80 grams b) 80 kilograms c) 80 tonnes
- 6) A bag of sugar weighs - a) 1 gram b) 10 grams c) 100 grams d) 1000 grams
- 7) My handspan measures - a) 15mm b) 15cm c) 15m
- 8) The thickness of a book is - a) 3cm b) 30cm c) 300cm
- 9) A cup full of coffee holds - a) 20 millilitres b) 200 millilitres c) 2 litres
- 10) The height of a table is - a) 75mm b) 75cm c) 75m
- 11) The height of a hedge is - a) 150cl b) 150cm c) 150g
- 12) The amount of water in the bath is - a) 200 metres b) 200 grams c) 200 litres

Exercise 2

In each of the following, say which two are equal.

- 1) 100cm, 1 metre, 10mm, 10cm
- 2) 60 litres, 60ml, 600ml, 6000ml, 6 litres
- 3) 7kg, 70g, 70kg, 7000g, 700g
- 4) 1000mm, 1km, 1000cm, 1000m
- 5) 10g, 100g, 1kg, 1000g
- 6) 300mm, 30cm, 3cm, 3m, 30m
- 7) 20 litres, 200ml, 2000ml, 20ml, 2 litres

Exercise 3

In each of the following, write down which measurement you would use.

Each time choose one of the measurements from this list:-

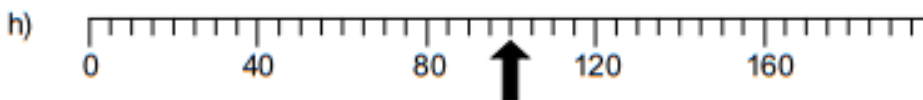
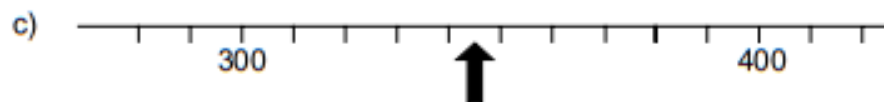
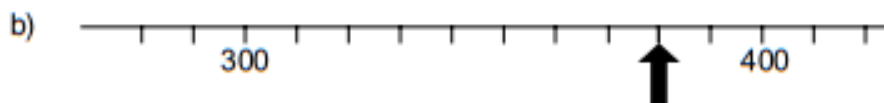
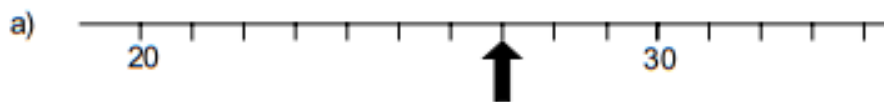
millimetres, centimetre, metre, gram, kilogram, millilitre, litre.

- 1) To measure the length of a garden.
- 2) To measure the weight of an egg.
- 3) To measure the capacity of a car's petrol tank.
- 4) To measure the length of pencil.
- 5) To measure the weight of a man.
- 6) To measure the capacity of a teaspoon.

Reading Scales

L.3

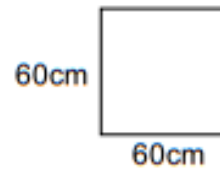
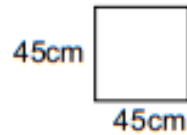
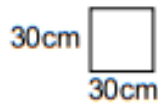
In each of the following diagrams say what number the arrow is pointing to.
In some cases you will have to approximate



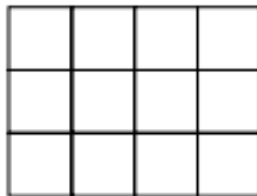
Paving Stones

L.3

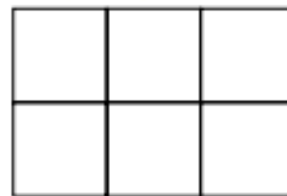
A garden centre sells paving stones to make patios. The square paving stones are in three sizes.



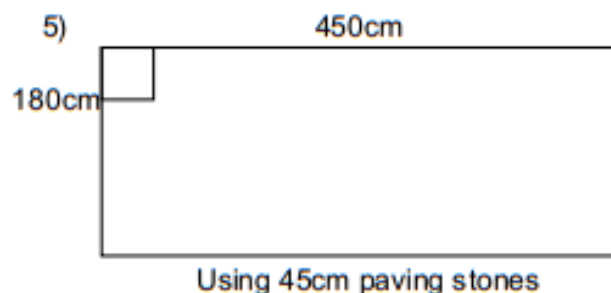
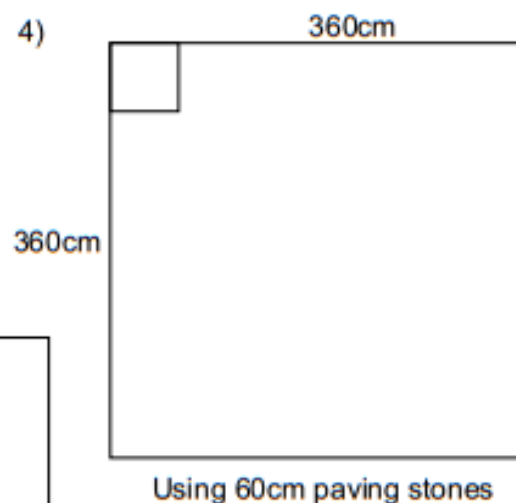
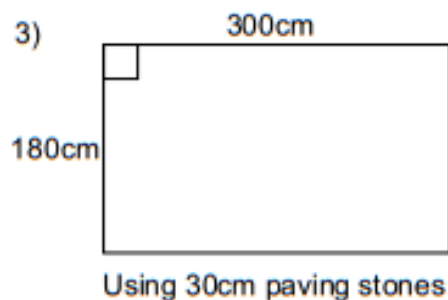
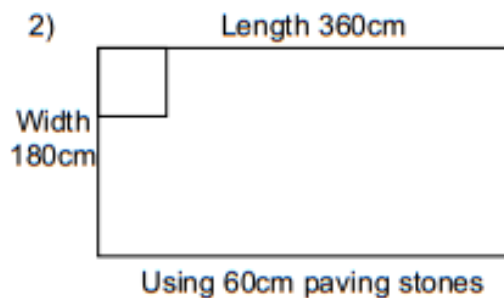
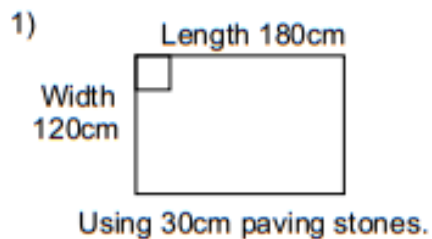
Twelve 30cm paving stones fit like this



Six 45cm paving stones fit like this



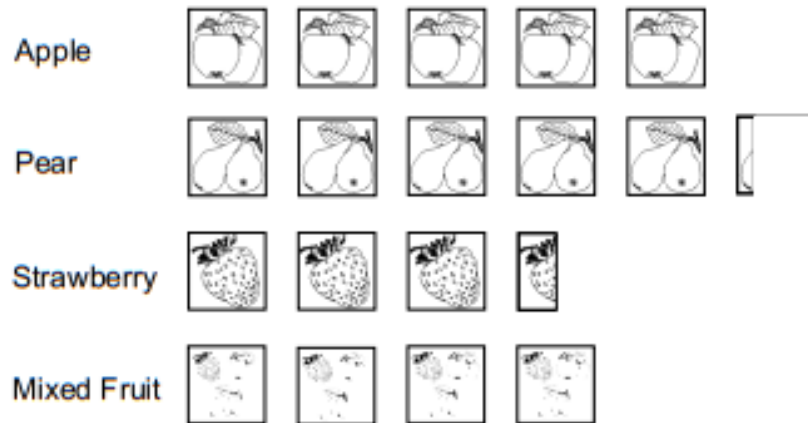
How many paving stones will be needed for these patios?



Pictograms

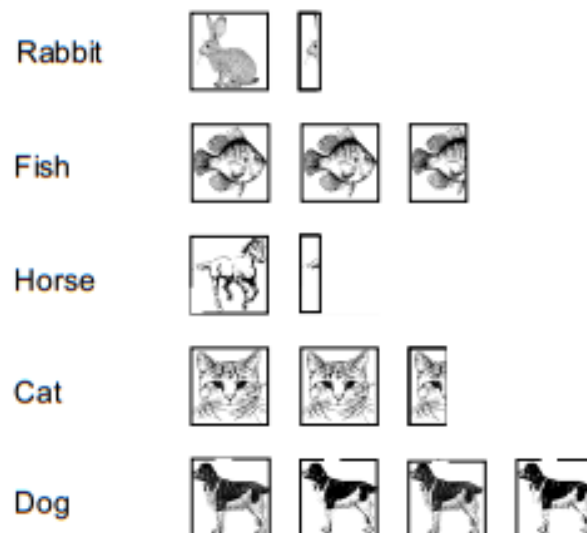
L.3

- 1) The pictogram shows the number of fruit pies sold by a baker.
Each square represents 10 pies



Look at the diagram and answer these questions.

- How many apple pies were sold?
 - How many strawberry pies were sold?
 - Approximately how many pear pies were sold?
 - The number of mixed fruit pies sold was 47. Draw the shape missing from the diagram.
- 2) A class of pupils were asked what types of pet they had. The results are shown on the pictogram below. One square represents 4 replies.

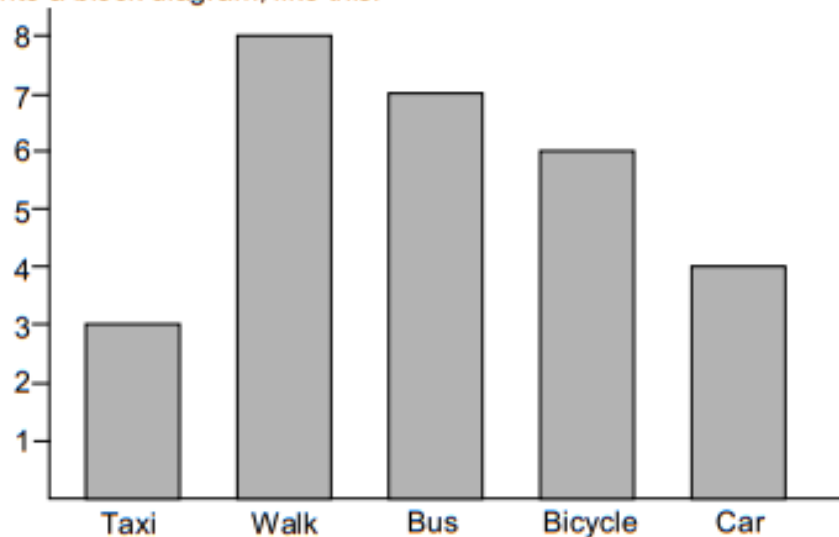


- How many pupils said that they have a dog?
- How many pupils said they kept fish?
- How many pupils said that they kept a cat?
- Which two groups had the same number of replies?
- What was the total number of replies?

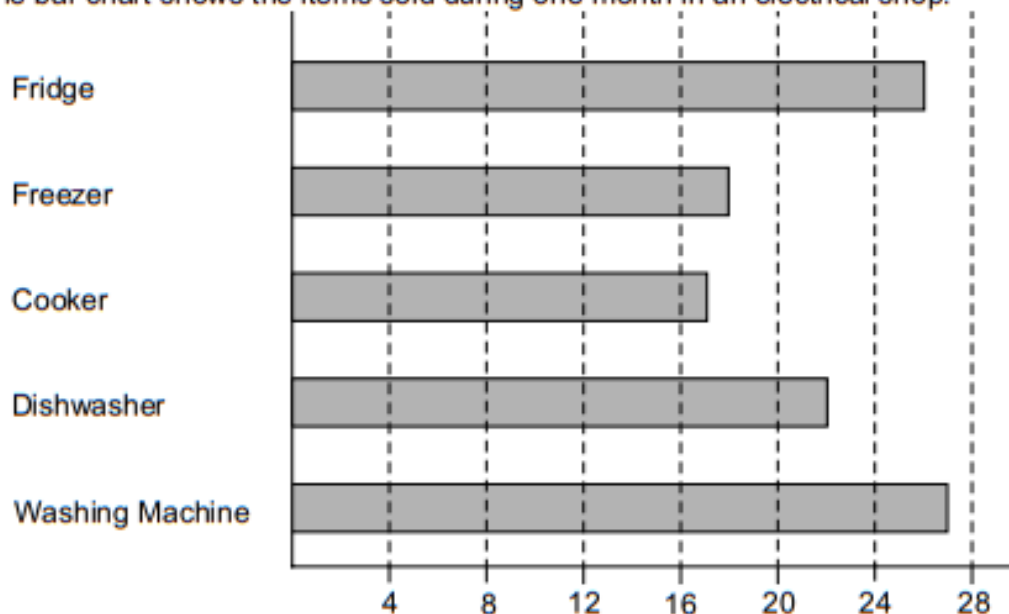
Bar Charts

L.3

- 1) Peter does a survey. He asks the pupils in his group how they get to school. He puts the data onto a block diagram, like this.



- a) How many pupils go to school by bus?
b) What was the most popular way of getting to school?
c) What way of getting to school did 4 people have?
d) How many pupils did Peter ask?
- 2) The bar chart shows the items sold during one month in an electrical shop.



Use the diagram to answer the questions.

- a) What was the most popular item sold?
b) How many cookers were sold?
c) How many fridges were sold?
d) What was the total number of items sold?

Charts and Pictograms

L.3

- 1) Kim does a survey. She asks the pupils in her class what their favourite pet is. She puts the data down like this.

Type of pet	Number of people
Dog	5
Cat	10
Hamster	8
Fish	4
Other	7

- a) What animal was the most popular?
 b) What does 'other' mean? Give an example.
 c) Draw a bar chart to show this data. Draw the bars horizontally.
- 2) The table below shows the number of people who bought drinks in a cafe during one day. Draw a pictogram to show the data.

Type of drink	Number of people
Cola	13
Tea	15
Coffee	10
Squash	12
Milk	7

Use a figure like this  to represent two people and half  to represent one.

- 3) Jill surveys the first 50 sales at the lunchtime tuck shop. Here are her results.

Type of snack	Number of sales
Apple	   
Chocolate bar	    
Orange	   
Crisps	  
Biscuits	 

- a) How many chocolate bars were sold?
 b) Use this data to draw a pictogram. Use one square to represent 4 sales. Put your own picture in the squares. The first line has been done for you.

Apple



Frequency Tables

L.3

- 1) Rifat does a survey. She asks the pupils in her class what kind of pet they have. She records the data in a frequency table like this.

Pet	Tally	Frequency
Dog	 	9
Cat	 	11
Hamster		3
Fish	 	5
Other	 	10
	Total	38

Look at the table then answer the questions.

- Rifat has made a mistake. She has added up one set of tally marks wrong. Which is it?
 - What should the total be?
 - Which animal is there most of?
 - There are 29 pupils in the class. Why is the total more than 29?
- 2) Daniel does a survey. He asks pupils in his class how they get to school. He recorded the data on a frequency table.

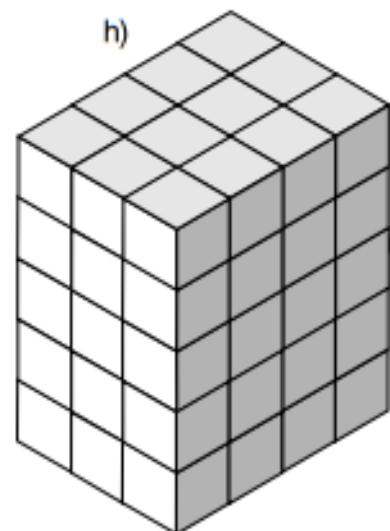
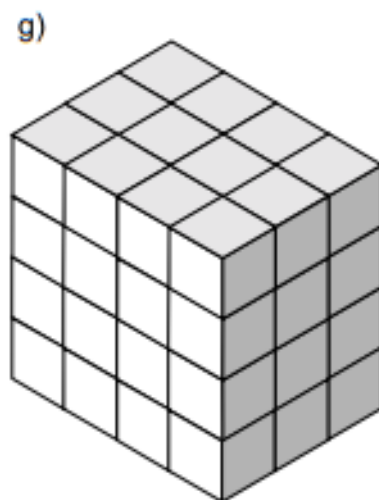
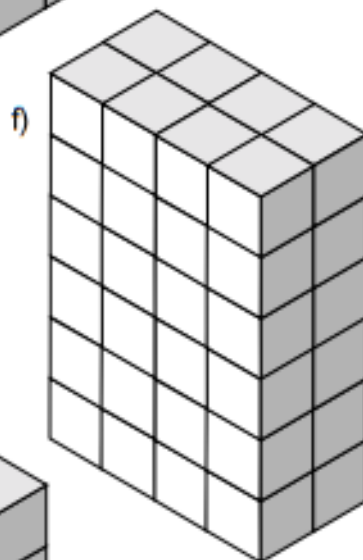
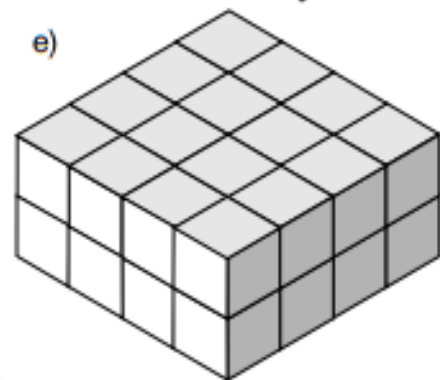
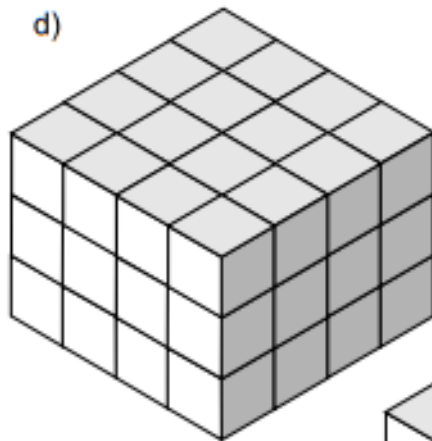
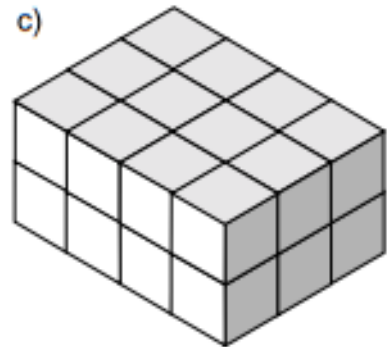
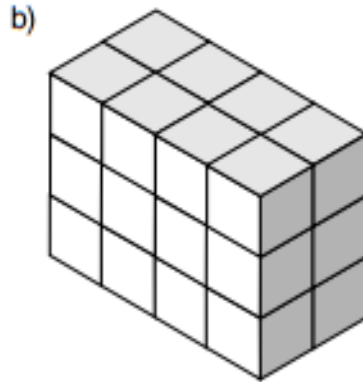
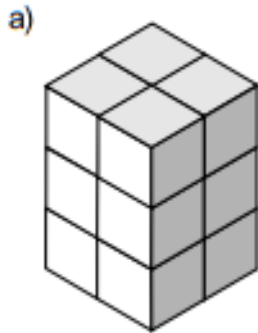
Transport	Tally	Frequency
Taxi		
Walk	 	
Bus	 	
Bicycle		
Car		
	Total	

- Copy the table into your book. Write down all the numbers in the frequency column
- How many pupils did Daniel ask?
- What was the most popular way of getting to school?
- What was the least popular way of getting to school?

Volume of a Cuboid

L.4

Each cuboid below has been made from smaller cubes.
How many cubes make up each cuboid?

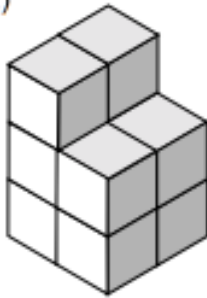


Volume of a Shape

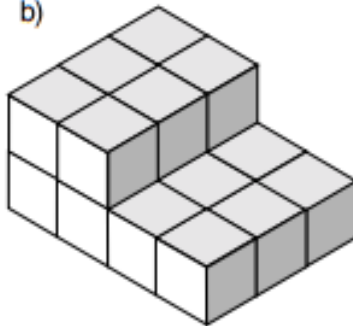
L.4

Each of the diagrams below have been made from two cuboids.
How many small cubes are there in each shape?

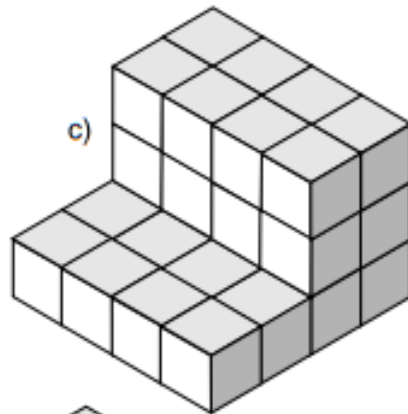
a)



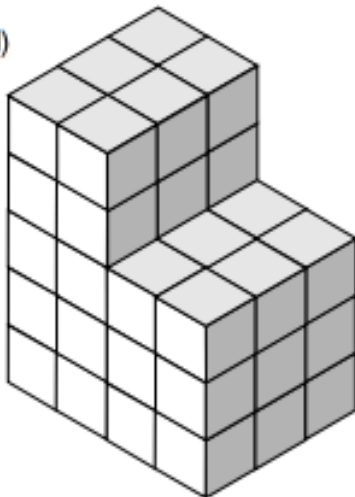
b)



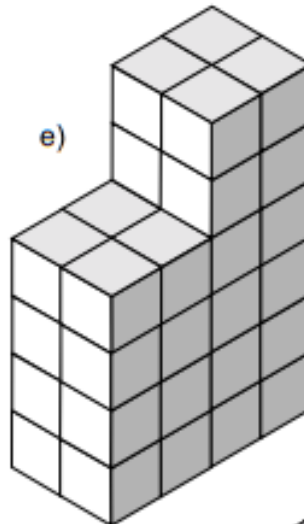
c)



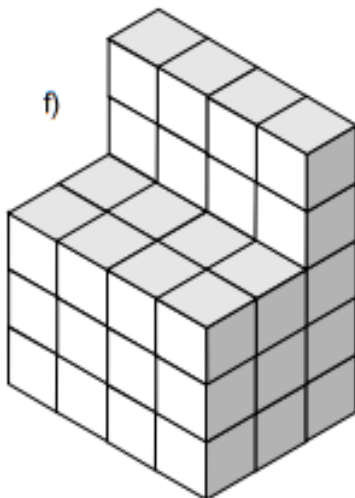
d)



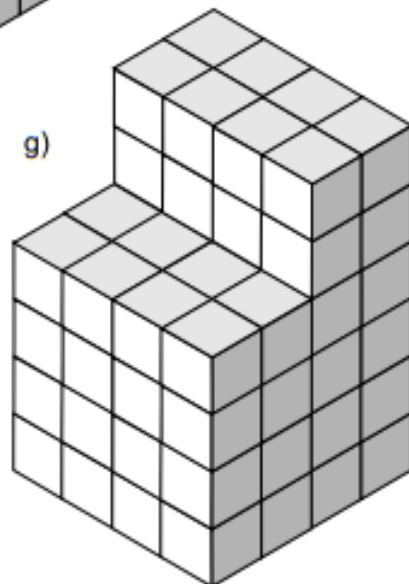
e)



f)



g)

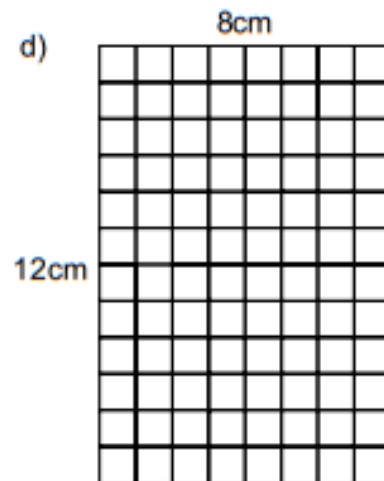
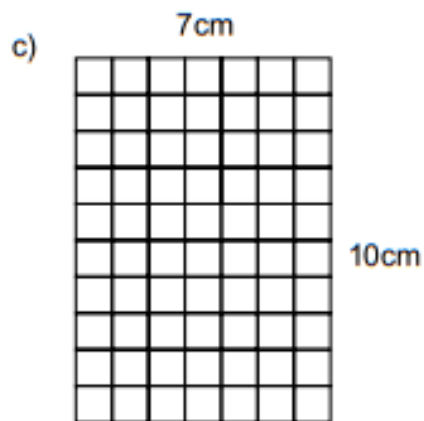
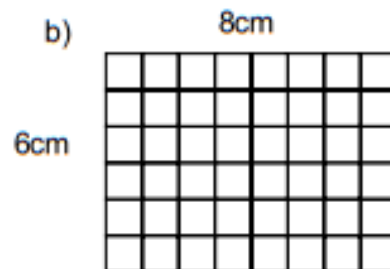
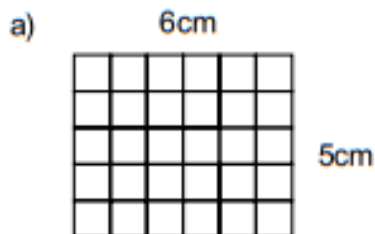


Area and Perimeter

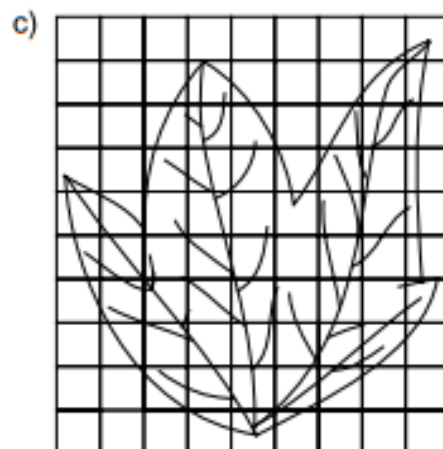
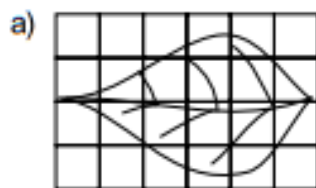
L.4

1) (i) By counting squares, say what the area of each diagram is.

(ii) What is the perimeter of each shape?



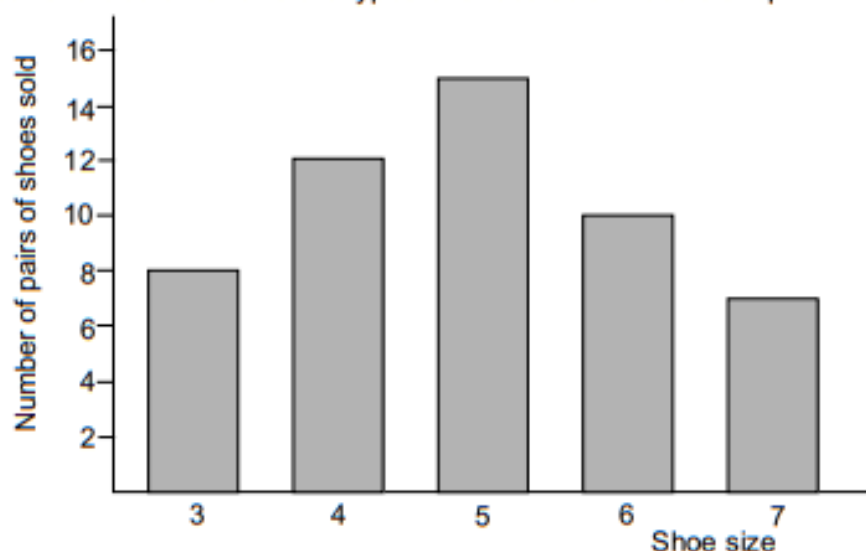
2) By counting squares, estimate the area of these leaves.



Mode and Range

L.4

1) The bar chart below shows the types of shoes sold in Joe's shop.



- a) What was the range of the shoe sizes sold?
- b) What was the mode of the shoe sizes sold?
- c) How many pairs of shoes were sold altogether?

2) The list below shows the ages of the people who go to the youth club.

13, 14, 16, 15, 15, 12, 13, 14, 15, 14, 14, 16, 15, 14, 13, 12, 16, 14, 13, 16,
14, 12, 16, 15, 14, 14, 14, 13, 12, 16, 16, 14, 15, 15, 12, 14, 13, 14, 15, 16,
13, 12, 15, 14, 14, 14

- a) Draw this chart and use the tally method to find the frequency of each age.

Age	Tally	Frequency
12		
13		
14		
15		
16		

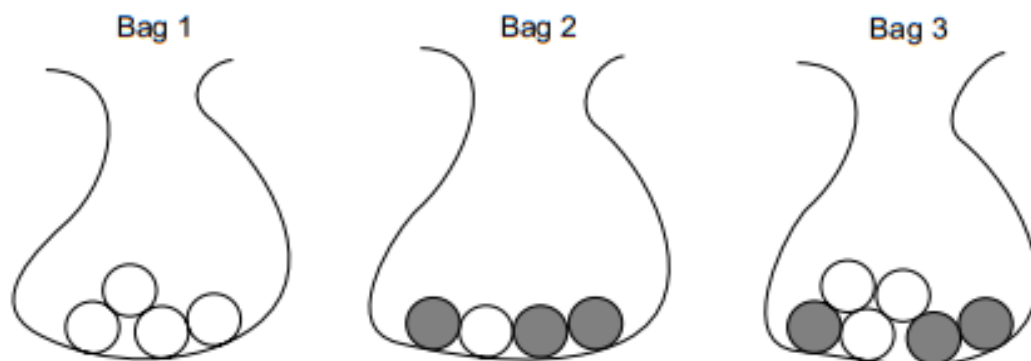
Use the chart to answer these questions.

- b) What is the range of the ages?
- c) What is the mode of the ages?
- d) How many people were at the youth club?

Probability

L.4

- 1) Sandra has 3 bags each containing beads.
Bag 1 contains 4 white beads.
Bag 2 contains 1 white beads and 3 black beads.
Bag 3 contains 3 white beads and 3 Black beads.



In the following questions, use one of these words to describe the probability.
Impossible, unlikely, equally likely, likely, certain.

Sandra puts her hand into a bag and without looking takes a bead from it.

- Sandra takes a white bead from bag 1
 - Sandra takes a black bead from bag 1
 - Sandra takes a black bead from bag 2
 - Sandra takes a white bead from bag 2
 - Sandra takes a black bead from bag 3
- 2) Khalid's class had to choose who was to be the register monitor for the week.
To be fair they wrote everyone's name on a separate piece of paper.
They put the pieces of paper in a bag and took one out.
There are 30 pupils in his class
Answer these questions.
- Khalid said that there was an equally likely chance they would choose a boy or a girl. If this was true, then how many boys were in the class?
 - The next week a new pupil joined the class. He was a boy. Does this make it more likely or less likely that a boy's name is drawn from the bag?
 - In the third week 6 girls and 9 boys go on a school trip.
A name is selected from the remainder of the class.
What name is more likely to be drawn, a boy's or a girl's?