

EXAM FEVER

Mathematics 7

Second edition

WORKBOOK

ANSWERS

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1 Whole Numbers

Exercise 1

- | | | |
|------------|------------|---------------------|
| 1.1 53 | 4.1 840 | 7.1 100 |
| 1.2 28 | 4.2 3 600 | 7.2 250 |
| 1.3 79 | 4.3 55 000 | 7.3 548 |
| 1.4 100 | 4.4 32 000 | 7.4 17 |
| 1.5 242 | | |
| 1.6 20 | 5.1 8 | 8.1 25 |
| | 5.2 80 | 8.2 400 |
| 2.1 12 | 5.3 80 | 8.3 $7\frac{1}{2}$ |
| 2.2 35 | 5.4 800 | 8.4 $54\frac{1}{2}$ |
| 2.3 18 | | |
| 2.4 70 | 6.1 100 | |
| 2.5 14 | 6.2 50 | |
| 2.6 25 | 6.3 9 | |
| | 6.4 50 | |
| 3.1 70 | | |
| 3.2 700 | | |
| 3.3 7 000 | | |
| 3.4 70 000 | | |

9.

Number	Nearest 10	Nearest 100	Nearest 1 000
843 964	843 960	844 000	844 000

Exercise 2

1. 7 345 982

2.

Millions			Thousands			Hundreds	Tens	Units
Hm	Tm	M	Hth	Tth	Th			
4	1	6	2	8	7	5	6	9

3.1 H or Hundred 3.2 M or Million

4.1 Six million seven hundred and eighty nine thousand three hundred and two.

4.2 Five hundred and fifty three million four hundred and three thousand and seven hundred and eighteen.

5.1 $2\ 000\ 000 + 500\ 000 + 40\ 000 + 6\ 000 + 200 + 90 + 2$

5.2 $60\ 000\ 000 + 4\ 000\ 000 + 400\ 000 + 50\ 000 + 9\ 000 + 200 + 30 + 4$

6.1 > 6.2 >

7. 53 416/56 189/74 618/80 714/93 168

8. 200 116; 183 716; 181 713; 157 116; 147 216

9. 241 863 ; 241 859

10.

5010	5020	5030	5040	5050	5060
-------------	------	-------------	-------------	------	-------------

11. $= (21\ 200 + 20\ 400) \div 2 = 41\ 600 \div 2 = 20\ 800$

Exercise 3

1.

										Total number of prime numbers
1	2✓	3✓	4	5✓	6	7✓	8	9	10	4
11✓	12	13✓	14	15	16	17✓	18	19✓	20	4
21	22	23✓	24	25	26	27	28	29✓	30	2
31✓	32	33	34	35	36	37✓	38	39	40	2
41✓	42	43✓	44	45	46	47✓	48	49	50	3
51	52	53✓	54	55	56	57	58	59✓	60	2
61✓	62	63	64	65	66	67✓	68	69	70	2
71✓	72	73✓	74	75	76	77	78	79✓	80	3
81	82	83✓	84	85	86	87	88	89✓	90	2
91	92	93	94	95	96	97✓	98	99	100	1
→ 5	1	7	0	1	0	6	0	5	0	25

Total number of prime numbers

2. D

3.1 2

3.2 2

3.3 3

4. 42; 44; 45; 46; 48; 49

5.1 710

5.2 71 820

6.1 8 165

6.2 976 000

6.3 10 000

6.4 880 000

7. 7 499

8. 17 950

9. $2 + 3 + 5 = 10$

10. $2 \times 3 \times 5 = 30$

11. $700 \times 100 = 70\,000$

12. $2\,890 + 2\,180 - 800 = 4\,270$

Exercise 4

1.1 True

1.2 False

1.3 True

1.4 False

1.5 True

2.1 17

2.2 undefined/
Meaningless

2.3 0

2.4 74

2.5 6

2.6 37

2.7 700

2.8 19 000

2.9 19 000

2.10 2 700

2.11 37

2.12 9 900

2.13 2 700

2.14 125

$$\begin{array}{r} 3.1 \quad 2\,346\,598 \\ + \quad 579\,312 \\ \hline 673\,429 \\ \hline 3\,599\,339 \end{array}$$

Check

$$\begin{array}{r} 3\,599\,339 \\ - 2\,346\,598 \\ \hline 1\,252\,741 \end{array}$$

$$\begin{array}{r} 3.2 \quad 47\,670 \\ - 19\,492 \\ \hline 28\,178 \end{array}$$

Check

$$\begin{array}{r} 28\,188 \\ + 19\,492 \\ \hline 47\,670 \end{array}$$

$$\begin{array}{r} 3.3 \quad 2\,706 \\ \times \quad 49 \\ \hline 24\,354 \\ + 108\,240 \\ \hline 132\,594 \end{array}$$

$$\begin{array}{r} 3.4 \quad \underline{232 \text{ r } 23} \\ 43 \overline{)9\,999} \\ \underline{-86} \\ 139 \\ \underline{129} \\ 109 \\ \underline{86} \\ 23 \end{array}$$

$$\begin{array}{r} 3.5 \quad 273\,462 \\ + \quad 897\,528 \\ \hline 1\,170\,990 \end{array}$$

$$\begin{array}{r} 3.6 \quad 4\,786 \\ \times \quad 29 \\ \hline 43\,074 \\ + 95\,720 \\ \hline 138\,794 \end{array}$$

$$3.7.1 \quad 473 \quad | \quad 3.7.2 \quad 36 \quad | \quad 3.7.3 \quad 17\,028$$

$$3.8.1 \quad 47 \quad | \quad 3.8.2 \quad 71$$

Exercise 5

- 4 8 12 16 20 24 28 32 36
- 125 250 375 500 625 750 875 1 000
- 49 56 63
- 4 12 42

$$\begin{array}{r|l} 5.1 & 1 \times 32 \\ & 2 \times 16 \\ & 4 \times 8 \end{array} \quad \begin{array}{r|l} 5.2 & 1 \times 125 \\ & 5 \times 25 \end{array}$$

$$6.1 \quad \boxed{\text{True}}$$

$$7.1 \quad C$$

$$6.2 \quad \boxed{\text{True}}$$

$$6.3 \quad \boxed{\text{True}}$$

Exercise 6

$$1. \quad 2 \quad 3 \quad 5 \quad 7$$

$$3. \quad \text{No}$$

$$2.1 \quad 1 \times 24$$

$$4. \quad \text{Yes}$$

$$2 \times 12$$

$$5. \quad \begin{array}{r|l} 2 & 42 \\ 3 & 21 \\ 7 & 7 \\ & 1 \end{array}$$

$$3 \times 8$$

$$4 \times 6$$

$$2.2 \quad 2 \text{ and } 3$$

$$42 = 2 \times 3 \times 7$$

$$\begin{array}{r|l} 6. \quad 2 & 162 \\ 3 & 81 \\ 3 & 27 \\ 3 & 9 \\ 3 & 3 \\ & 1 \end{array} \quad \begin{array}{r|l} 5 & 275 \\ 5 & 55 \\ 11 & 11 \\ & 1 \end{array}$$

Prime factor of 162 are 2 and 3

Prime factor of 275 are 5 and 11

$$\begin{array}{r|l} 7. \quad 2 & 900 \\ 2 & 450 \\ 3 & 225 \\ 3 & 75 \\ 5 & 25 \\ 5 & 5 \\ & 1 \end{array}$$

Prime factor of 900 are 2/3/5

Exercise 7

Lowest Common Multiple

- 6/12/18/24/30/36/42/48/54/60/8/16/24/32/40/48/56/64/72/80
- 24
- 9/18/27/36/45/54/63/72/81/90
15/30/45/60/75/90
18/36/54/72/90
LCM is 90

Highest Common Factor

- $$\begin{array}{r|l} 1. \quad 1 \times 24 & 1 \times 36 \\ 2 \times 12 & 2 \times 18 \\ 3 \times 8 & 3 \times 12 \\ 4 \times 6 & 4 \times 9 \\ & 6 \times 6 \end{array}$$
- $$1.1 \quad 1; 2; 3; 4; 6; 12 \quad | \quad 1.2 \quad 12$$

(20)		(30)	
2. 1×20	2×10	1×30	HCF of 20 and 30 is 10
2×10	4×5	2×15	
4×5		3×10	
		5×6	

(44)		(66)	
3. 1×44	2×22	1×66	HCF of 44 and 66 is 22
2×22	4×11	2×33	
4×11		3×22	
		6×11	

Exercise 8

1. When you compare two or more quantities of the same kind.
- 2.1 $= 700 : 343 = 100 : 49$
- 2.2 $= 180 : 150 = 18 : 15$
 $= 6 : 5$
- 2.3 $= 275 : 400 = 11 : 16$
3. Ratios: H = 4 : 3
No of parts = 7
Sipho gets $\frac{4}{7}$ of R84
 $= R12 \times 4 = R48$
Henry gets $\frac{3}{7}$ of R48
 $= R12 \times 3 = R36$
4. Ratio = T : S = 5 : 1
No of parts = 6
Tim gets $\frac{5}{6}$ of R120
 $= R20 \times 5 = R100$
Solly gets R20
5. Ratio of: B : 6 = 3 : 5 : 2
No of parts = 10
Alice gets $\frac{3}{10}$ of R150
 $= R15 \times 3 = R45$
Bernard gets $\frac{5}{10}$ of R150
 $= R15 \times 5 = R75$
Charles gets $\frac{2}{10}$ of R150
 $= R15 \times 2 = R30$

Exercise 9

1. Rate is when you compare two quantities of different types.
- 2.1 a) $\frac{1}{2}$ of 80 km = 40 km
b) $\frac{1}{4}$ of 80 km = 20 km
c) 80 km x 8 = 640 km
- 2.2 $\frac{200}{80} h = \frac{20}{8} h = \frac{5}{2} h = 2\frac{1}{2} h$
3. 3 books cost R360
1 book costs $\frac{360}{3} = R120$
5 books cost $R120 \times 5 = R600$
4. 150 ml \rightarrow R18 250 ml \rightarrow R32
50 ml \rightarrow R6 50 ml \rightarrow R6,40
150ml @ R18 is cheaper.

Exercise 10

1. 1. B 2. D 3. A 4. C
2.
$$\begin{array}{r} R25\ 000 \\ -17\ 354 \\ \hline R7\ 646 \end{array}$$
3.
$$\begin{array}{r} R5\ 875 \\ -4\ 199 \\ \hline R1\ 676 \end{array}$$
4.
$$\begin{array}{r} R1\ 800 \\ -1\ 250 \\ \hline R\ 550 \end{array}$$
5.
$$\begin{array}{r} R496,10 \\ 5 \overline{)R2\ 480,50} \end{array}$$
6. Cash price
 $= 80\%$ of R5 800
 $= R \frac{80}{100} \times \frac{5\ 800}{1}$
 $= R4\ 640$
OR
Discount
 $= 20\%$ of R5 800
 $= R1\ 160$
Cash Price
 $= R5\ 800 - R1\ 160$
 $= R4\ 640$

Exercise 11

$$1. \quad SI = \frac{R12\,000 \times 2 \times 10}{100}$$

$$= R2\,400$$

$$2. \quad SI = \frac{R8\,000 \times 8 \times 2}{100}$$

$$= R1\,280$$

$$\text{Amount received}$$

$$= R8\,000 + R1\,280$$

$$= R9\,280$$

$$3. \quad \text{Interest} = \frac{R4\,000 \times 10 \times 2}{100}$$

$$= R800$$

$$\text{Amount owed} = R4\,000 + R800 = R4\,800$$

$$\text{Monthly instalment} = R4\,800 \div 24 = R200$$

$$4. \quad \text{Cost } R80\,000$$

$$\text{Deposit } 8\,000$$

$$\text{Balance over } R72\,000$$

$$\text{Interest} = \frac{R72\,000 \times 8 \times 2}{100}$$

$$= R11\,520$$

$$\text{Amount owed}$$

$$= R72\,000 + R11\,520$$

$$= R83\,520$$

$$\text{Monthly repayment}$$

$$= R83\,520 \div 24$$

$$= R3\,480$$

CONSOLIDATION AND EXTENSION

1. 704 605/640 057/470 506/407 605

2. 2 287 785/2 728 287/2 785 287/2 827 587

	Number	Round off to the nearest 5	Round off to the nearest 10	Round off to the nearest 100	Round off to the nearest 1 000
3.1	45 874	45 875	45 870	45 900	46 000
3.2	296 497	296 495	296 500	296 500	296 000

$$4. \quad \begin{array}{r} 3\,407\,816 \\ + 278\,719 \\ + 14\,763 \\ \hline 3\,701\,298 \end{array}$$

$$5. \quad \begin{array}{r} 4\,000\,000 \\ - 1\,763\,987 \\ \hline 2\,236\,013 \end{array}$$

$$6. \quad \begin{array}{r} 765 \\ \times 897 \\ \hline 5\,355 \\ 68\,850 \\ + 612\,000 \\ \hline 686\,205 \end{array}$$

$$7. \quad \begin{array}{r} 1\,054 \text{ rem } 9 \\ 14 \overline{)14\,765} \\ \underline{-14} \\ 76 \\ \underline{-70} \\ 65 \\ \underline{-56} \\ 9 \end{array}$$

8. 4: 4; 8; 12; 16; (20); 24
5: 5; 10; 15; (20); 25; 30

9. 18: 1 2 3 (6) 9 18
24: 1 2 3 4 (6) 8 12 24

10. 5 7 11 29

11. 2/3/5

12. C : A
1 : 4
25 : 4 x 25(100)
100 adults

13. R125 x 12 = R1 500
This is cheaper.
OR
R1 756 ÷ 12 = R146,33/hr
∴ R125 is cheaper

2 Exponents

Exercise 1

1.

Power	Base	Exponent	Expanded form	Answer
2^2	2	2	2×2	4
2^3	2	3	$2 \times 2 \times 2$	8
5^4	5	4	$5 \times 5 \times 5 \times 5$	625
3^3	3	3	$3 \times 3 \times 3$	27
9^3	9	3	$9 \times 9 \times 9$	729
2^4	2	4	$2 \times 2 \times 2 \times 2$	16
5^1	5	1	5	5

$$2.1 = 5^5$$

$$2.2 = 7^1$$

$$2.3 = 9^2$$

$$2.4 = 8^3$$

$$4.1 \quad \boxed{=}$$

$$4.2 \quad \boxed{>}$$

$$4.3 \quad \boxed{<}$$

$$4.4 \quad \boxed{>}$$

$$3.1 = 1$$

$$3.2 = 7$$

$$3.3 = 125$$

$$5.1 \quad 1 \quad (2^0)$$

$$2 \quad (2^1)$$

$$4 \quad (2^2)$$

$$8 \quad (2^3)$$

$$16 \quad (2^4)$$

$$5.2 \quad 2^{19}$$

Exercise 2

$$1.1 \quad \text{No}$$

$$1.2 \quad \text{Yes}$$

$$1.3 \quad \text{Yes}$$

$$1.4 \quad \text{No}$$

$$1.5 \quad \text{Yes}$$

$$1.6 \quad \text{Yes}$$

$$2.1 = 2 \times 2 = 4$$

$$2.2 = 1 \times 1 = 1$$

$$2.3 = 7 \times 7 = 49$$

$$2.4 = 8 \times 8 = 64$$

$$2.5 = 8$$

$$2.6 = 9$$

$$2.7 = 12$$

$$2.8 = 1$$

$$2.9 = 2$$

$$2.10 = \sqrt{16} = 4$$

$$3.1 = 5^3 = 5 \times 5 \times 5 = 125$$

$$4.1 = 25 - 16 = 9$$

$$4.2 = 81 - 64 = 17$$

$$4.3 = 100 - 81 = 19$$

$$4.4 = 25 - 9 = 16$$

$$4.5 = 81 - 49 = 32$$

$$4.6 = 100 - 64 = 36$$

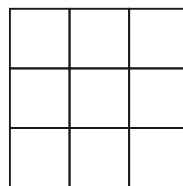
$$5.1 \quad 1$$

$$5.2 \quad 4$$

$$5.3 \quad 9$$

$$5.4 \quad 10 \times 10 = 100$$

$$6.1$$



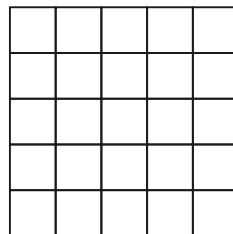
1 large square (9)

9 small square (1)

4 medium squares (2 × 2)

Total = 14

$$6.2$$



1 large (5 × 5)

25 small (1 × 1)

4 (4 × 4)

9 (3 × 3)

16 (2 × 2)

Total = 55

Exercise 3

- 1.1 = $10 \times 10 \times 10 = 1\ 000$
 1.2 = $11 \times 11 \times 11 = 1\ 331$
 1.3 = $12 \times 12 \times 12 = 1\ 728$

- 2.1 No
 2.2 Yes
 2.3 No
 2.4 No
 3.1 = $64 - 1 = 63$
 3.2 $1\ 000 - 64 = 936$
 3.3 = $\sqrt[3]{27} = 3$
 3.4 = $\sqrt[3]{64} = 4$
 3.5 = $1 + 4 = 5$
 3.6 = $4^3 = 64$

4. $\sqrt[3]{27} = 3$ $\sqrt[3]{64} = 4$
 3 and 4

5.1

5.2

5.3

Exercise 4

1.1 = $\sqrt{2^2 \times 5^2}$ 2 | 100
 = 2×5 2 | 50
 = 10 5 | 25
 5 | 5
 1

1.2 = $\sqrt{3^2 \times 5^2}$ 3 | 225
 = 3×5 3 | 75
 = 15 5 | 25
 5 | 5
 1

1.3 = $\sqrt{2^2 \times 7^2}$ 2 | 196
 = 2×7 2 | 98
 = 14 7 | 49
 7 | 7
 1

1.4 = $\sqrt{2^4 \times 5^2}$ 2 | 400
 = $2^2 \times 5$ 2 | 200
 = 4×5 2 | 100
 = 20 2 | 50
 5 | 25
 5 | 5
 1

1.5 = $\sqrt{2^8}$ 2 | 256
 = 2^4 2 | 128
 = 16 2 | 64
 2 | 32
 2 | 16
 2 | 8
 2 | 4
 2 | 2
 2 | 1

Exercise 5

1.1 = $\sqrt[3]{2^3 \times 5^3}$ 2 | 1 000
 = 2×5 2 | 500
 = 10 2 | 250
 5 | 125
 5 | 25
 5 | 5
 1

1.2 = $\sqrt[3]{2^9}$ 2 | 512
 = 2^3 2 | 256
 = 8 2 | 128
 2 | 64
 2 | 32
 2 | 16
 2 | 8
 2 | 4
 2 | 2
 1

1.3 = $\sqrt[3]{2^6 \times 3^3}$ 2 | 1 728
 = $2^2 \times 3$ 2 | 864
 = 4×3 2 | 432
 = 12 2 | 216
 2 | 108
 2 | 54
 3 | 27
 3 | 9
 3 | 3
 1

$$1.4 = \sqrt[3]{3^3 \times 5^3}$$

$$= 3 \times 5$$

$$= 15$$

3	3 375
3	1 125
3	375
5	125
5	25
5	5
5	1

Exercise 6

$$1.1 = \sqrt{25} = 5$$

$$1.2 = \sqrt{100} = 10$$

$$1.3 = \sqrt{100} = 10$$

$$1.4 = \sqrt[3]{64} = 4$$

$$1.5 = \sqrt{9} = 3$$

$$1.6 = 9 + 8 = 17$$

$$1.7 = 11 + 3 - 1$$

$$= 14 - 1$$

$$= 13$$

$$1.8 = \sqrt{100} + \sqrt{16}$$

$$= 10 + 4$$

$$= 14$$

$$1.9 = 7 + \sqrt[3]{125}$$

$$= 7 + 5$$

$$= 12$$

$$1.10 = 1 + 1 + 1$$

$$= 3$$

$$1.11 = \sqrt{25} = 5$$

$$1.12 = \sqrt[3]{256 \times 625}$$

$$= \sqrt[3]{160\,000}$$

$$= 54,29$$

Exercise 7

1.2 Amount of carpet
 $= 4 \text{ m} \times 4 \text{ m}$
 $= 16 \text{ m}^2$

Cost of carpet
 $= \text{R}150 \times 16$
 $= \text{R}2\,400$

2. Volume
 $= 15 \text{ cm} \times 15 \text{ cm} \times 15 \text{ cm}$
 $= 3\,375 \text{ cm}^3$

3. 5×10^9

CONSOLIDATION AND EXTENSION

$$1.1 = 6^2$$

$$1.2 = 9^4$$

$$1.3 = m^6$$

$$1.4 = 5^2$$

$$2.1 = 8$$

$$2.2 = 25$$

$$2.3 = 15$$

$$2.4 = 11$$

$$2.5 = 4$$

$$2.6 = 3$$

$$3.1 = \sqrt[3]{64} = 4$$

$$3.2 = \sqrt{64} = 8$$

$$3.3 = \sqrt[3]{1\,000} = 10$$

$$4.1 <$$

$$4.2 >$$

$$4.3 =$$

$$4.4 <$$

$$5.1 = 6 \text{ and } 7$$

$$5.2 = 8 \text{ and } 10$$

$$6.1 = \sqrt[3]{3^2 \times 7^2}$$

$$= 3 \times 7$$

$$= 21$$

3	441
3	147
7	49
7	7
7	1

$$= \sqrt[3]{2^9 \times 3^3}$$

$$= 2^3 \times 3$$

$$= 8 \times 3$$

$$= 24$$

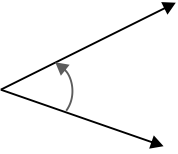
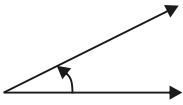
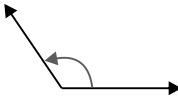
2	13 824
2	6 912
2	3 456
2	1 728
2	864
2	432
2	216
2	108
2	54
3	27
3	9
3	3
3	1

3 Construction of Geometrical Shapes (and Geometry of Straight Lines)

Exercise 1

- 1.1 \widehat{AOB}
 \widehat{BOA}
- 1.2 \widehat{CDE}
 \widehat{EDC}
- 1.3 \widehat{DBC}
 \widehat{CBD}
- 1.4 1) \widehat{CBA} or \widehat{ABC}
 2) \widehat{CBD} or \widehat{DBC}
 3) \widehat{CBC}
 4) \widehat{CBE} or \widehat{EBC}
- 2.1 obtuse angle
 2.2 right angle
 2.3 acute angle
 2.4 revolution
 2.5 straight line
 2.6 reflex angle

Exercise 2

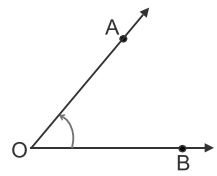
Angle	Acute	Right	Obtuse	Straight	Reflex
173°			✓		
119°			✓		
73°	✓				
180°				✓	
275°					✓
90°		✓			
316°					✓
	✓				
	✓				
			✓		

Exercise 3

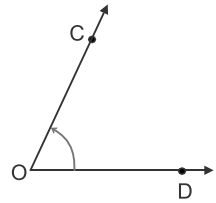
Q No.	Type of angle	Name	Estimate	Measurement
3.1	Acute	$\hat{A}OB$	20°	22°
3.2	Acute	$\hat{C}OD$	45°	46°
3.3	Right	$\hat{E}OF$	90°	90°
3.4	Obtuse	$\hat{K}OL$	160°	165°
3.5	Reflex	$\hat{M}NO$	330°	336°
3.6	Reflex	$\hat{P}OR$	220°	220°
3.7	Acute	$\hat{Y}OZ$	90°	89°

Exercise 4

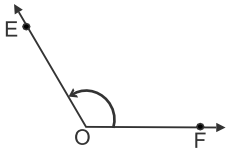
4.1



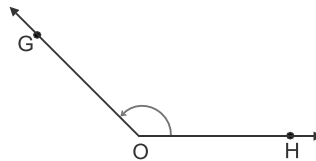
4.2



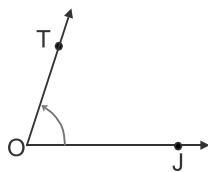
4.3



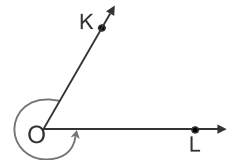
4.4



4.5

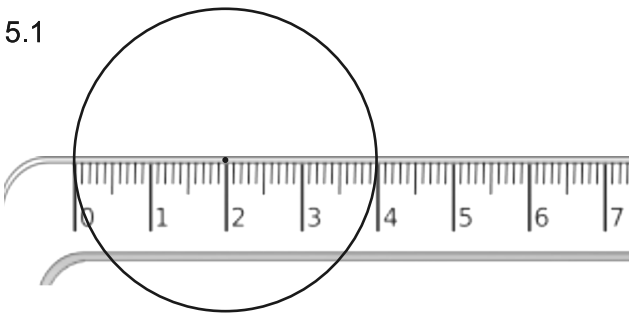


4.6

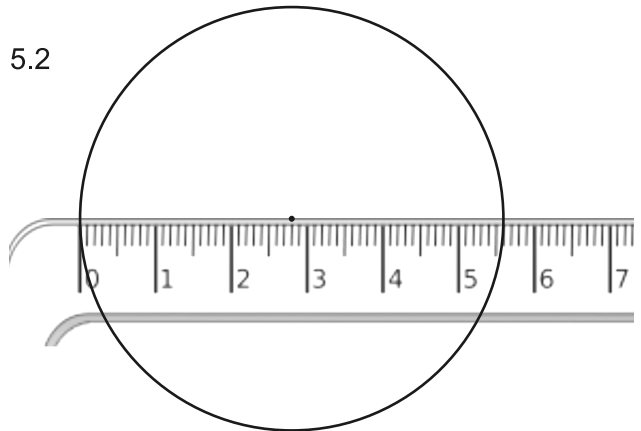


Exercise 5

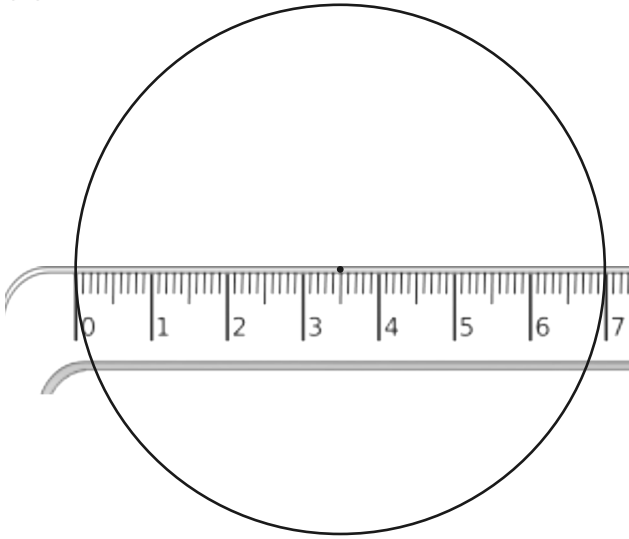
5.1



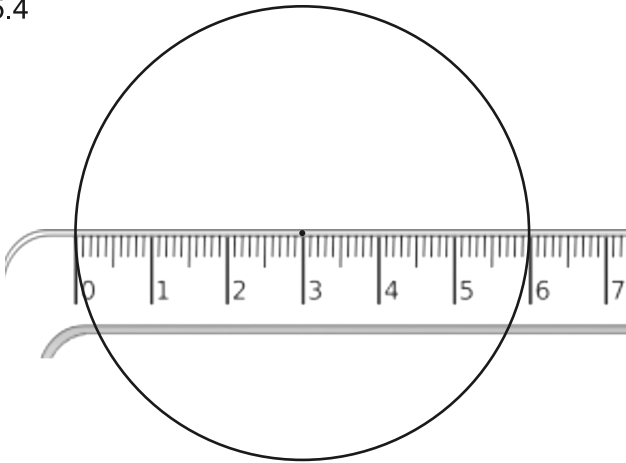
5.2



5.3



5.4



Exercise 6

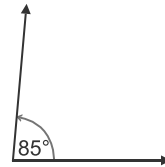
- 1.1 Part of a line that is bounded by 2 distinct end points and contains every point between the endpoints.
- 1.2 A line with a start point (end point) on one side that continues to infinity in the opposite direction.
- 1.3 Is a collection of points with no curves and no thickness that extends in both directions without end (to infinity).
- 1.4 Are two or more lines that are always the same distance apart and never touch (intersect).
- 1.5 The relationship between 2 lines which meet at a right angle (90°)/lines that are at right angles to each other.

- 2.1.1 AB or CD
- 2.1.2 AC
- 2.1.3 BD
3. A
4. A

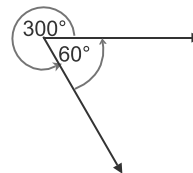
CONSOLIDATION AND EXTENSION

- 1.1 obtuse
- 1.2 reflex
- 1.3 acute
- 1.4 right
- 1.5 straight
- 1.6 revolution
- 2.1 30°
- 2.2 120°

3.1



3.2



- 4.1 AD or BC
- 4.2 AB or DC
- 4.3 AC
- 4.4 BC or AD
- 4.5 DC

4

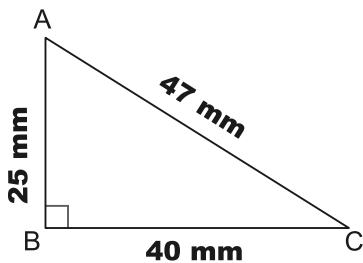
Geometry of 2-D Shapes

(Classifying 2D shapes)

Exercise 1

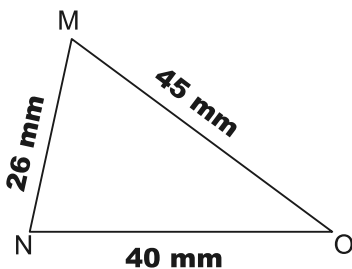
- 1.1 A triangle where all three sides are equal or a triangle that is equiangular. i.e. Each angle is 60° .
- 1.2 A triangle that has 2 equal sides. Or a triangle that has any 2 interior angles equal.
- 1.3 A triangle where all three sides are different or all 3 angles are of different measure.
- 1.4 A triangle which has a right angle.

2.1



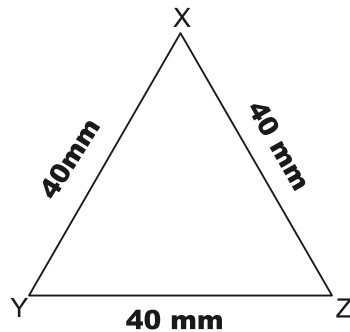
Right-angled triangle

2.2



Acute angled triangle or Scalene

2.3



Acute angled triangle or Equilateral

- 3.1 Right angled
- 3.2 Equilateral triangle or Acute angle
- 3.3 Isosceles Triangle or Acute angle

4.1.1 $\hat{A}: 58^\circ$ $\hat{B}: 90^\circ$ $\hat{C}: 32^\circ$

Right angle triangle

4.1.2 $\hat{A}: 60^\circ$ $\hat{B}: 60^\circ$ $\hat{C}: 60^\circ$

Equilateral triangle

4.1.3 $\hat{A}: 96^\circ$ $\hat{B}: 42^\circ$ $\hat{C}: 42^\circ$

Isosceles triangle

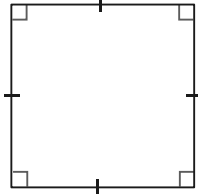
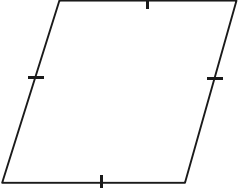
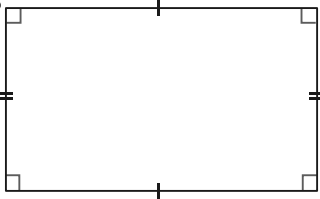
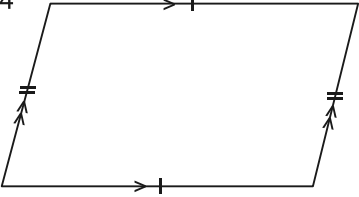
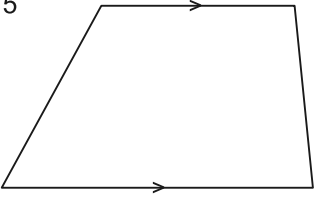
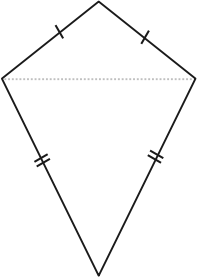
5.1 Complete: The sum of all angles in a triangle = **180°**

5.2.1 $\hat{C} = 180^\circ - (55^\circ + 62^\circ) = 63^\circ$

5.2.2 \hat{C} **35°**

5.2.3 \hat{C} **36°**

Exercise 2 - Quadrilaterals

Quadrilateral	Name	Property
1.1 	square	4 equal sides 4 right angles each angle measures 90°
1.2 	rhombus	4 sides equal 2 acute and 2 obtuse angles
1.3 	rectangle	opposite sides equal 4 right angles each angle measures 90°
1.4 	parallelogram	opposite sides parallel and equal =
1.5 	trapezium	only one pair of parallel lines
1.6 	kite	2 pairs of adjacent sides are equal

- 2.1 square, rhombus
 - 2.2 square/rhombus/rectangle/parallelogram
 - 2.3 square, rhombus, kite
 - 2.4 rectangle, square
 - 2.5 square, rectangle
 - 2.6 square, rectangle, rhombus, parallelogram.
3. 70 m; 30; 70; 30; 100°; 80°; 100°; 80°

- 3.1 parallelogram
- 3.2 AD and BC
AB and DC
- 3.3 \hat{A} and \hat{C}/\hat{D} and B
- 4.1 Kite
- 4.2 Parallelogram
- 4.3 Rhombus
- 5.1 BC = CD = AD
- 5.2 $\hat{D} = \hat{A} = \hat{B}$
- 5.3 DC and BC
- 5.4 BC and AD

Exercise 3

- 3.1
- | | |
|-------------|------------------|
| 1. diameter | 2. chord |
| 3. segment | 4. sector |
| 5. radius | 6. circumference |
- 3.2 1

Exercise 4

- 1.1 congruent: side/side/side
- 1.2. congruent: 2 sides and the included angle
- 1.3 congruent: 2 sides and the included angle
- 1.4. congruent: corresponding sides are equal
- 1.5 Similar: Corresponding sides are in same proportions
- 1.6 No: corresponding sides are not in same proportions

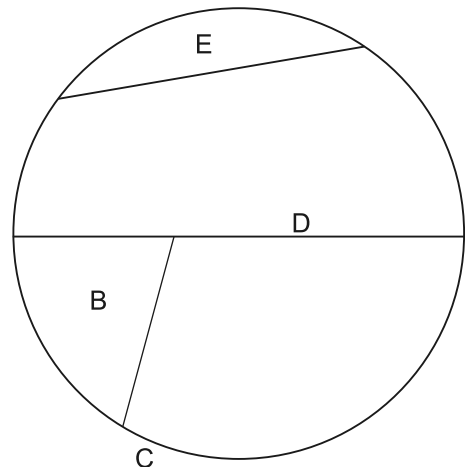
Exercise 5

- | | |
|---------|---------|
| 1.1 70° | 1.2 50° |
| 1.3 60° | 1.4 40° |

CONSOLIDATION AND EXTENSION

- 1.1 $\Delta ABC = \frac{P}{3}$
 $= \frac{30 \text{ cm}}{3}$
 $= 10 \text{ cm}$
 AB = 10 cm
- 1.2 P + | + | + |
 50 cm = 25 m + 10mm + |
 50 cm = 35 m + |
 50 cm - 35 cm = |
 AC = 15 cm
- 1.3 P = | + | + |
 170 cm = 60 cm + 60 cm + |
 170 cm - 120 cm = |
 50 cm = |
 AC = 50 cm
- 2.
- 2.1 Square/Rhombus 2.2 Square/Rectangle
- 2.3 Kite/Square
- 3.1 60° 3.2 90° 3.3 150° 3.4 6 cm
- 3.5 QP || MN
- 3.6 QP ⊥ PN or MN ⊥ PN
- 3.7 P = 3l
 $= 3 \times 6 \text{ cm} = 18 \text{ m}$
- 4.1 70° 4.2 140°
- 5.1 congruent: sides equal, angles equal
- 5.2 similar
 same shape different sizes
 (sides of one twice as long as another)

6.



5 Common Fractions

Exercise 1

- proper
improper
improper
mixed
proper
mixed

2.

3. $1\frac{2}{10}$ $2\frac{5}{8}$ $2\frac{1}{10}$ $2\frac{1}{8}$ $1\frac{1}{12}$ $3\frac{1}{5}$ 2 2 $8\frac{4}{5}$

4. $\frac{9}{2}$ $\frac{7020}{1000}$ $\frac{69}{5}$ $\frac{7}{2}$ $\frac{5001}{1000}$ $\frac{72}{10}$

$\frac{27}{4}$ $\frac{10099}{1000}$ $\frac{206}{100}$

5. $\frac{1}{10}$ $\frac{2}{10}$ $\frac{3}{10}$ $\frac{4}{10}$ $\frac{5}{10}$ $\frac{6}{10}$ $\frac{7}{10}$

$\frac{17}{1000}$ $\frac{71}{1000}$ $\frac{177}{1000}$ $\frac{701}{1000}$ $\frac{717}{1000}$ $\frac{771}{1000}$

6. $\frac{7}{8}$ $\frac{3}{4}$ $\frac{5}{8}$ $\frac{1}{2}$ $\frac{3}{8}$ $\frac{1}{4}$

$\frac{99}{100}$ $\frac{78}{100}$ $\frac{70}{100}$ $\frac{67}{100}$ $\frac{27}{100}$ $\frac{24}{100}$

7. $\frac{12}{20}$ $\frac{5}{6}$ $\frac{8}{10}$ $\frac{14}{16}$ $\frac{4}{5}$ $\frac{6}{7}$

8. $\frac{3}{4}$ $\frac{6}{7}$ $\frac{7}{10}$ $\frac{1}{4}$ $\frac{1}{2}$ $\frac{6}{25}$ $\frac{5}{6}$ $\frac{16}{27}$ $\frac{61}{72}$

$\frac{31}{27}$ $\frac{3}{5}$ $\frac{111}{250}$

9.1 6; 12; 18; 24
8; 16; 24
24

9.2 3; 6; 9; 12
4; 8; 12
12

9.3 5; 10; 15; 20; 25; 30
6; 12; 18; 24; 30
30

9.4 4; 8; 12; 16
6; 12
12

Exercise 2

1.1 $\frac{8}{8}$

1.2 $\frac{5}{6}$

1.3 $\frac{12}{10} + \frac{4}{10}$
 $= \frac{16}{10}$

$= 1\frac{6}{10} = 1\frac{3}{5}$

1.4 $\frac{7}{8} + \frac{4}{8}$
 $= \frac{11}{8} = 1\frac{3}{8}$

2.1 $\frac{5}{8}$

2.2 $\frac{4}{9}$

2.3 $\frac{4}{10} - \frac{4}{10}$
 $= 0$

2.4 $\frac{6}{12} - \frac{4}{12}$
 $= \frac{2}{12} = \frac{1}{6}$

1.5 $\frac{9}{15} + \frac{5}{15}$
 $= \frac{14}{15}$

1.6 $\frac{18}{30} + \frac{10}{30}$
 $= \frac{28}{30} = \frac{14}{15}$

1.7 $\frac{10}{12} + \frac{9}{12}$
 $= \frac{19}{12} = 1\frac{7}{12}$

1.8 $\frac{35}{56} + \frac{24}{56}$
 $\frac{59}{56} = 1\frac{3}{56}$

2.5 $\frac{9}{12} - \frac{4}{12}$
 $= \frac{5}{12}$

2.6 $\frac{28}{56} - \frac{8}{56}$
 $= \frac{20}{56} = \frac{5}{14}$

2.7 $\frac{30}{60} - \frac{12}{60}$
 $= \frac{18}{60} = \frac{3}{10}$

$$2.8 \quad \frac{35}{40} - \frac{32}{40}$$

$$= \frac{3}{40}$$

$$2.9 \quad \frac{9}{12} + \frac{4}{12} - \frac{6}{12}$$

$$= \frac{7}{12}$$

$$2.10 \quad \frac{25}{30} + \frac{18}{30} - \frac{27}{30}$$

$$= \frac{16}{30} = \frac{8}{15}$$

$$2.11 \quad \frac{5}{8}$$

$$2.12 \quad \frac{1}{5}$$

$$2.4 = 4\frac{27}{30} - \frac{20}{30} = 4\frac{7}{30}$$

$$2.6 = 6\frac{3}{7}$$

$$2.5 = 2 - \frac{2}{3} = 1\frac{3}{3} - \frac{2}{3}$$

$$= 1\frac{1}{3}$$

Exercise 3

$$1.1 = 6 + 1 = 7$$

$$(4 + 2) + \left(\frac{1}{3} + \frac{2}{3}\right) \text{ or } \frac{13}{3} + \frac{8}{3}$$

$$= 6 + 1 = 7$$

$$= \frac{21}{3} = 7$$

$$1.2 = 5\frac{5}{6}$$

$$(3 + 2) + \left(\frac{1}{6} + \frac{4}{6}\right) \text{ or } \frac{19}{6} + \frac{16}{6}$$

$$= 5 + \frac{5}{6} = 5\frac{5}{6}$$

$$1.3 = 6\frac{2}{6} + \frac{1}{6} = 6\frac{3}{6} = 6\frac{1}{2}$$

$$1.7 = 8\frac{1}{3}$$

$$1.4 = 10\frac{4}{14} + \frac{5}{14} = 10\frac{9}{14}$$

$$1.8 = 101\frac{1}{100}$$

$$1.5 = 8\frac{7}{10} + \frac{5}{10} = 8\frac{12}{10}$$

$$2.1 = 2\frac{7}{10}$$

$$= 9\frac{2}{10} = 9\frac{1}{5}$$

$$2.2 = 9\frac{5}{8}$$

$$1.6 = 10\frac{14}{18} + \frac{9}{18} = 10\frac{23}{18}$$

$$2.3 = 9\frac{4}{10} - \frac{2}{10} = 9\frac{2}{10}$$

$$= 11\frac{5}{18}$$

$$= 9\frac{1}{5}$$

Exercise 4

$$1.1 = 28 \div 4 = 7$$

$$1.2 = 63 \div 3 \times 2 = 21 \times 2 = 42$$

$$1.3 = 140 \div 10 \times 9 = 14 \times 9 = 126$$

$$1.4 = 144 \div 12 \times 7 = 12 \times 7 = 84$$

$$1.5 = 2000 \div 100 \times 10 = 20 \times 10 = \text{R}200$$

$$1.6 = \text{R}840 \div 10 \times 7 = \text{R}84 \times 7 = \text{R}588$$

$$2.1 \text{ left } \frac{5}{7} \text{ of } 14 \text{ m}$$

$$= 2 \text{ m} \times 5 = 10$$

OR

$$\text{Cut off } \frac{2}{7} \text{ of } 14 \text{ m} = 4 \text{ m}$$

$$\text{Left} = 14 \text{ m} - 4 \text{ m} = 10 \text{ m}$$

$$2.2 \quad \frac{1}{5} \text{ of } \text{R}1\,500 \times 4 = \text{R}300 \times 4 = \text{R}1\,200$$

Exercise 5

Cancel

$$1.1 \quad \frac{1}{2} \times \frac{1}{4}$$

$$\frac{1}{8}$$

$$1.2 \quad \frac{1}{3} \times \frac{8}{7}$$

$$\frac{1}{7}$$

Cancel

$$1.3 \quad \frac{8}{12} \times \frac{24}{30}$$

$$\frac{2}{5}$$

$$1.4 \quad \frac{7}{14} \times \frac{7}{21}$$

$$\frac{1}{6}$$

By cancelling

$$1.5 \quad \frac{\cancel{21}}{50} \times \frac{100}{\cancel{210}}$$

$$\frac{1}{5}$$

By cancelling

$$1.6 \quad \frac{\cancel{8}}{12} \times \frac{10}{\cancel{12}}$$

$$\frac{5}{12}$$

By cancelling

$$2.1 \quad \frac{7}{3} \times \frac{25}{6} = \frac{175}{18}$$

$$= 9\frac{13}{18}$$

$$2.2 \quad \frac{\cancel{14}}{4} \times \frac{\cancel{34}}{10} = \frac{119}{10}$$

$$= 11\frac{9}{10}$$

$$3. \quad 4\frac{1}{2} \times 6 = 24 \text{ km} + 3 \text{ km} = 27 \text{ km}$$

By cancelling

$$2.3 \quad \frac{5}{2} \times \frac{9}{4} = \frac{45}{8}$$

$$= 5\frac{5}{8}$$

$$2.4 \quad \frac{9}{5} \times \frac{7}{3} = \frac{63}{15}$$

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

Exercise 6

$$1.1 \quad \text{We ate } \frac{1}{2} + \frac{1}{4} + \frac{1}{8} = \frac{4}{8} + \frac{2}{8} + \frac{1}{8}$$

$$= \frac{7}{8} \quad \text{Dad ate } \frac{1}{8}$$

$$1.2 \quad \text{Total} = \frac{3}{4} + \frac{1}{2} + \frac{1}{6} \text{ kg} = \frac{9}{12} + \frac{6}{12} + \frac{2}{12} \text{ kg}$$

$$= \frac{17}{12} \text{ kg} = 1\frac{5}{12} \text{ kg}$$

$$1.3 \quad \text{left } \frac{1}{4} \text{ of } \frac{8}{10} = \frac{1}{5} \quad \text{OR} \quad \frac{3}{4} \text{ of } \frac{8}{10} = \frac{3}{5}$$

$$\text{left } \frac{8}{10} - \frac{3}{5} = \frac{8}{10} - \frac{6}{10} = \frac{2}{10} = \frac{1}{5}$$

$$1.4 \quad \text{Sold } \frac{3}{8} \text{ of } 80 = 30$$

$$\text{Given away } \frac{1}{4} \text{ of } 80 = 20$$

$$\text{left } 80 - (30 + 20) = 80 - 50 = 30 \quad \text{OR}$$

$$\text{Sold and given away} = \frac{3}{8} + \frac{1}{4} = \frac{3}{8} + \frac{2}{8} = \frac{5}{8}$$

$$\text{left} = \frac{3}{8} \text{ of } 80 = 80 \div 8 \times 3 = 10 \times 3 = 30$$

$$1.5 \quad \frac{2}{9} \text{ of } 450 \text{ litres} = 50 \text{ l} \times 2 = 100 \text{ l}$$

$$\frac{1}{5} \text{ of } 450 \text{ litres} = 90 \text{ litres}$$

$$\text{water left} = 450 - (100 + 90) \text{ l} =$$

$$450 - 190 \text{ l} = 260 \text{ l} \quad \text{OR}$$

$$\frac{2}{9} + \frac{1}{5} = \frac{10}{45} + \frac{9}{45} = \frac{19}{45} \quad \text{left} = \frac{26}{45}$$

$$\text{left} = \frac{26}{45} \text{ of } 450 \text{ l} = 260 \text{ litres}$$

$$2.1 \quad \text{a) } \frac{15}{35} \text{ or } \frac{3}{7}$$

$$\text{c) } \frac{4}{35}$$

$$\text{b) } \frac{20}{35} \text{ or } \frac{4}{7}$$

$$\text{d) } \frac{30}{35} \text{ or } \frac{6}{7}$$

$$2.2 \quad 5\frac{1}{2} - (2\frac{1}{3} + 1\frac{3}{4})$$

$$5\frac{6}{12} - (2\frac{4}{12} + 1\frac{9}{12})$$

$$5\frac{6}{12} - 4\frac{1}{2} = 1\frac{5}{12}$$

Exercise 7

$$1.1 \quad 6\%$$

$$1.7 \quad 60\%$$

$$1.13 \quad 90\%$$

$$1.2 \quad 50\%$$

$$1.8 \quad 50\%$$

$$1.14 \quad 90\%$$

$$1.3 \quad 24\%$$

$$1.9 \quad 27\%$$

$$1.15 \quad 50\%$$

$$1.4 \quad 48\%$$

$$1.10 \quad 25\%$$

$$1.16 \quad 25\%$$

$$1.5 \quad 50\%$$

$$1.11 \quad 84\%$$

$$1.6 \quad 40\%$$

$$1.12 \quad 52\%$$

$$2.1 \quad \frac{20}{100} = \frac{1}{5}$$

$$2.5 \quad \frac{42}{100} = \frac{21}{50}$$

$$2.2 \quad \frac{99}{100}$$

$$2.6 \quad \frac{5}{100} = \frac{1}{20}$$

$$2.3 \quad \frac{80}{100} = \frac{4}{5}$$

$$2.7 \quad \frac{25}{100} = \frac{1}{4}$$

$$2.4 \quad \frac{75}{100} = \frac{3}{4}$$

$$2.8 \quad \frac{2}{100} = \frac{1}{50}$$

$$3.1 \quad R\frac{1}{5} \times \frac{60}{1} = R12$$

$$3.2 \quad \frac{3}{4} \text{ of } 48 = 36$$

$$3.3 \quad \frac{32}{100} \times 100 \text{ cm} = 32 \text{ cm}$$

$$3.4 \quad \frac{44}{100} \times \frac{36\,000}{1} = R44 \times 360 = 15\,840$$

$$3.5 \quad \frac{1}{100} \times \frac{20}{1} = \frac{1}{5}$$

$$3.6 \quad \frac{5}{100} \times \frac{37}{1} = \frac{185}{100}$$

Exercise 8

1.1 Discount = 25% of R6 500

$$\frac{1}{4} \text{ of } R6\,500 = R1\,625 \text{ OR}$$

$$\text{He paid } R6\,500 - R1\,625 = R4\,875$$

1.2 He paid 114% of R24 000

$$= \frac{114}{100} \times \frac{24\,000}{1} = R27\,360 \text{ OR}$$

$$\text{VAT} = 14\% \text{ or } R24\,000$$

$$R\frac{14}{100} \times \frac{24\,000}{1} = R3\,360$$

Price including VAT

$$= R24\,000 + R3\,360 = R27\,360$$

1.3 90% of R54 = $\frac{90}{100} \times \frac{54}{1} = R48,60$

1 kg R47

$$88\% \text{ of } R47 = \frac{88}{100} \times \frac{47}{1} = R41,36$$

The second option 2 kg is cheaper.

1.4 $\% = \frac{40c}{320} = \frac{40}{320} = \frac{1}{8} = 12,5\%$

1.5 Increase = R24

$$\% \text{ increase} = \frac{24}{60} \times \frac{100}{1} = 40\%$$

1.6 Decrease = R0,50

$$\% \text{ decrease} = \frac{50}{1\,250} \times \frac{100}{1} = 4\%$$

Exercise 9

1.1 $\frac{8}{10}$

1.5 $\frac{18}{54}$

1.2 $\frac{20}{30}$

1.6 $\frac{2}{5}$

1.3 $\frac{36}{45}$

1.7 $\frac{75}{100}$

1.4 $\frac{10}{15}$

1.8 $\frac{25}{100}$

2.1 0,6 | 2.4 0,03 | 2.7 0,42 | 2.10 0,5
 2.2 0,9 | 2.5 0,08 | 2.8 0,99 | 2.11 0,75
 2.3 0,1 | 2.6 0,12 | 2.9 0,25 | 2.12 0,8

3.

Common fraction	Decimal fraction	Percentage
$\frac{21}{100}$	0,21	21%
$\frac{67}{100}$	0,67	67%
$\frac{52}{100}$	0,52	52%
$\frac{1}{2}$	0,5	50%
$\frac{1}{4}$	0,25	25%
$\frac{3}{4}$	0,75	75%
$\frac{3}{5}$	0,6	60%
$\frac{3}{5}$	0,6	60%
$\frac{7}{20}$	0,35	35%
$\frac{42}{50}$	0,84	84%

CONSOLIDATION AND EXTENSION

1.1 $\frac{2}{8}$

1.3 $\frac{24}{56}$

1.2 $\frac{4}{10}$

1.4 $\frac{1}{2}$

2.1 $\frac{7}{2}$

2.2 $\frac{51}{10}$

3.1 $2\frac{2}{5}$

3.2 $3\frac{1}{4}$

4.1 $=$

4.2 $>$

4.3 $<$

5.1 $\frac{6}{7}$

5.2 $\frac{1}{2}$

6.1 $= \frac{2}{8} + \frac{2}{8} = \frac{4}{8} = \frac{1}{2}$

6.2 $= \frac{8}{10} - \frac{4}{10} = \frac{4}{10} = \frac{2}{5}$

6.3 $5\frac{3}{12} + \frac{8}{12} = 5\frac{11}{12}$

6.4 $7\frac{1}{10} - 3\frac{8}{10} = 6\frac{11}{10} - 3\frac{8}{10} = 3\frac{3}{10}$

6.5 $\frac{1}{3}$

6.6 $\frac{2}{7}$

6.7 $\frac{4}{3} \times \frac{13}{6} = \frac{26}{9} = 2\frac{8}{9}$

6.8 $36 \div 4 \times 3 = 9 \times 3 = 27$

7.1 $\frac{1}{3}$ of $\frac{1}{2} = \frac{1}{6}$

left $= \frac{1}{2} - \frac{1}{6} = \frac{3}{6} - \frac{1}{6} = \frac{2}{6} = \frac{1}{3}$

7.2 $\frac{1}{2}$ of R100 = R50 (saved)

Percentages

1.1 6%

1.2 28%

1.3 72%

1.4 25%

2.

Fraction	Decimal Fraction	Percentage
$\frac{12}{100}$	0,12	12%
$\frac{25}{100} / \frac{1}{4}$	0,25	25%
$\frac{50}{100} / \frac{1}{2}$	0,5	50%
$\frac{3}{4}$	0,75	75%
$\frac{6}{100}$	0,06	6%
$\frac{44}{100}$	0,44	44%

3.1 $R\frac{54}{100} \times \frac{200}{1} = R108$

3.2 $R\frac{18}{25} \times \frac{100}{1} = 72\%$

3.3 85% of R800 Discount
 = R85 × 8 = 15% of R800 = R120
 = R680 He pays
 R800 – R120 = R680

3.4 Decrease = R4

% decrease = $\frac{4}{12} \times \frac{100}{1} = 33\frac{1}{3}\%$

3.5 Increase = R50

% increase = $\frac{50}{150} \times \frac{100}{1} = 33\frac{1}{3}\%$

6 Decimal Fractions

Exercise 1

1. $\frac{4}{10}$ $\frac{6}{100}$ | 2. $\frac{1}{100}$ $\frac{1}{100}$

$\frac{4}{100}$ $\frac{9}{100}$ | $\frac{1}{10}$ $\frac{1}{100}$

4 20 | t Th

3. Six comma seven three.

Two hundred and fourteen comma six seven.

Eight hundred and seventy four comma nine six.

Six thousand three hundred and twenty one comma four two.

4. $\frac{4}{10} + \frac{3}{100}$

$$90 + 6 + \frac{3}{10} + \frac{2}{100} + \frac{1}{1000}$$

$$400 + 30 + 2 + \frac{3}{10} + \frac{6}{100} + \frac{1}{1000}$$

$$2\ 000 + 100 + 40 + 3 + \frac{4}{100} + \frac{9}{1000}$$

5. 21,23 106,04 2 607 000,12

6.

7. 0,674 92,687 416,340

8. 0,8; 0,824; 0,834; 8,08; 8,8

3,624; 3,642; 36,264; 36,426

9. 406,2; 40,6; 4,062; 4,06

88,3; 88,246; 38,37; 8,8; 8,37; 8,246

10. 0,3 1 1,3

11. $\frac{2}{5}$ $\frac{99}{100}$ $\frac{2}{500} = \frac{1}{250}$ $\frac{18}{25}$ $\frac{102}{125}$ $\frac{41}{100}$

12. 0,4 0,94 0,042 3.672
0,46 2,47 0,921 2,7
0,57

13. 2,124 723,739

14.

Exercise 2

1.1 4,5 | 1.3 9,2
18,7 | 4,5
38,0 | 6,0
0,3 | 49,8
0,0
0,1

1.2 4,36 | 1.4 8,42
15,66 | 21,68
68,98 | 3,01
0,22 | 128,42
0,10
43,00 | 1.5 7
9
16
28

Exercise 3

1.1 $\begin{array}{r} 4,0 \\ + 6,2 \\ \hline 10,2 \end{array}$ | 1.3 $\begin{array}{r} 21,416 \\ 7,000 \\ + 8,920 \\ \hline 37,336 \end{array}$

1.2 $\begin{array}{r} 3,49 \\ + 37,96 \\ \hline 41,45 \end{array}$ | 1.4 $\begin{array}{r} 36,000 \\ 4,4967 \\ + 2,0400 \\ \hline 42,5367 \end{array}$

$$\begin{array}{r} 2.1 \quad 3,6 \\ - 2,1 \\ \hline 1,5 \end{array}$$

$$\begin{array}{r} 2.5 \quad 7,00 \\ - 6,21 \\ \hline 0,79 \end{array}$$

$$\begin{array}{r} 1.3 \quad 36,421 \\ \times 4 \\ \hline 145,584 \end{array}$$

$$\begin{array}{r} 1.4 \quad 237,271 \\ \times 32 \\ \hline 474,542 \\ 7118,130 \\ \hline 7592,672 \end{array}$$

$$\begin{array}{r} 2.2 \quad 361,42 \\ - 132,96 \\ \hline 228,46 \end{array}$$

$$\begin{array}{r} 2.6 \quad 36,000 \\ - 9,672 \\ \hline 26,328 \end{array}$$

Exercise 5

1.1 Calculate

$$1.1 \quad 0,21$$

$$1.2 \quad 1,42$$

$$1.3 \quad 0,2641$$

$$1.4 \quad 8,2146$$

$$1.5 \quad 0,0009$$

$$1.6 \quad 4,673$$

1.2 Calculate

$$1.1 \quad \begin{array}{r} 8,668 \\ 4 \overline{)34,672} \end{array}$$

$$1.3 \quad \begin{array}{r} 8,205 \\ 12 \overline{)98,46} \end{array}$$

$$1.2 \quad \begin{array}{r} 2,19 \\ 9 \overline{)19,71} \end{array}$$

$$1.4 \quad \begin{array}{r} 3,495 \\ 8 \overline{)27,96} \end{array}$$

Exercise 4

1. Multiplication

$$1.1 \quad 62$$

$$1.2 \quad 496$$

$$1.3 \quad 943$$

$$1.4 \quad 4121$$

$$1.5 \quad 4$$

$$1.6 \quad 672$$

$$1.7 \quad 9634$$

$$1.8 \quad 600$$

1.2 Calculate

$$1.1 \quad 6$$

$$1.2 \quad 0,6$$

$$1.3 \quad 0,06$$

$$1.4 \quad 0,006$$

$$1.5 \quad 0,00006$$

$$1.6 \quad 45$$

$$1.7 \quad 4,5$$

$$1.8 \quad 0,45$$

$$1.9 \quad 0,045$$

$$1.10 \quad 0,0045$$

1.3 Calculate

$$1.1 \quad 0,52$$

$$1.2 \quad 0,2$$

$$1.3 \quad 0,64$$

$$1.4 \quad 0,48$$

$$1.5 \quad 0,56$$

$$1.6 \quad 0,72$$

$$1.7 \quad 0,01$$

$$1.8 \quad 1,17$$

$$1.9 \quad 1,44$$

$$1.10 \quad 0,015$$

$$1.11 \quad 0,161$$

$$1.12 \quad 0,044$$

Exercise 6

$$1.1 \quad \begin{array}{r} 1,34 \text{ m} \\ + 1,05 \text{ m} \\ \hline 2,39 \text{ m} \end{array} \quad \text{or} \quad \begin{array}{r} 134 \text{ cm} \\ + 105 \text{ cm} \\ \hline 239 \text{ cm} \end{array}$$

$$1.2 \quad \begin{array}{r} 1,34 \text{ m} \\ - 1,05 \text{ m} \\ \hline 0,29 \text{ m} \end{array} \quad \text{or} \quad \begin{array}{r} 134 \text{ cm} \\ - 105 \text{ cm} \\ \hline 29 \text{ cm} \end{array}$$

$$1.3 \quad \begin{array}{r} 1,05 \text{ m} \\ + 0,97 \text{ m} \\ \hline 2,02 \text{ m} \end{array}$$

$$2. \quad \begin{array}{r} 421,67 \text{ m} \\ \times 3 \\ \hline 1265,01 \text{ m} \end{array}$$

1.4 Calculate

$$1.1 \quad \begin{array}{r} 79,693 \\ \times 9 \\ \hline 717,237 \end{array}$$

$$1.2 \quad \begin{array}{r} 32,421 \\ \times 21 \\ \hline 32,421 \\ 648,420 \\ \hline 680,841 \end{array}$$

CONSOLIDATION AND EXTENSION

1.1 $\frac{4}{10}$

1.2 20

2.1 $40 + 6 + \frac{7}{10} + \frac{3}{100}$

3.1 $\frac{66}{100} = \frac{33}{50}$

3.2 $\frac{7}{100}$

4.1 36,7

4.2 812,6

5.1
$$\begin{array}{r} 467,32 \\ 89,00 \\ + 3,427 \\ \hline 559,747 \end{array}$$

5.4
$$\begin{array}{r} \text{R}500,00 \\ - 298,54 \\ \hline \text{R}201,46 \end{array}$$

5.2
$$\begin{array}{r} 648,600 \\ - 321,997 \\ \hline 326,603 \end{array}$$

5.5 Total
$$\begin{array}{r} \text{R}129,50 \\ + 59,98 \\ \hline 9,99 \\ \hline \text{R}199,47 \end{array}$$

5.3
$$\begin{array}{r} 800,00 \\ - 46,73 \\ \hline 753,27 \end{array}$$

$$\begin{array}{r} \text{Change} \\ \text{R}200,00 \\ - 199,47 \\ \hline \text{R}0,53 \end{array}$$

6.1 86,2 6.2 232,1 6.3 17 246

6.4 2,142 6.5 41,6832 6.6 0,17246

7.1
$$\begin{array}{r} 6,21 \\ \times 4 \\ \hline 24,84 \end{array}$$

7.3
$$\begin{array}{r} 0,8 \\ 8 \overline{) 6,4} \end{array}$$

7.4
$$\begin{array}{l} = 2,146 \div 2 \\ = 1,073 \end{array}$$

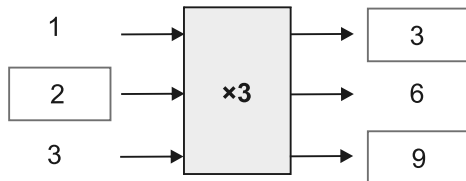
7.2
$$\begin{array}{r} 8,2 \\ \times 3,4 \\ \hline 328 \\ + 2460 \\ \hline 27,88 \end{array}$$

7

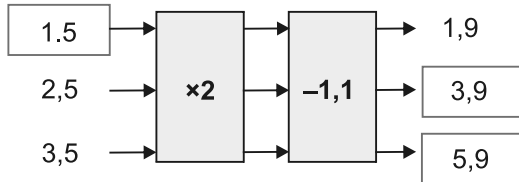
Functions & Relationships

Exercise 1

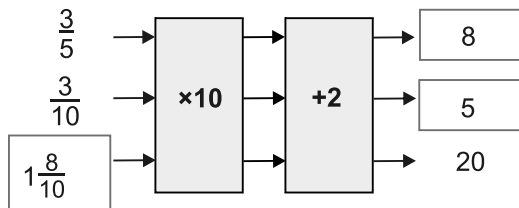
1.1



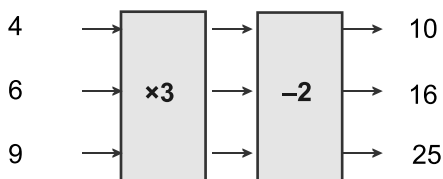
1.2



1.3

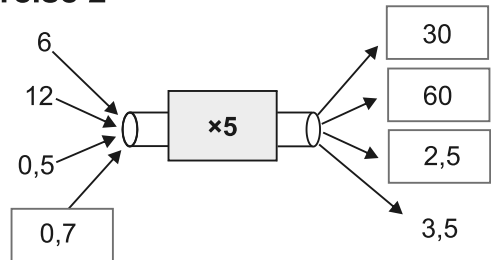


2.



Exercise 2

1.



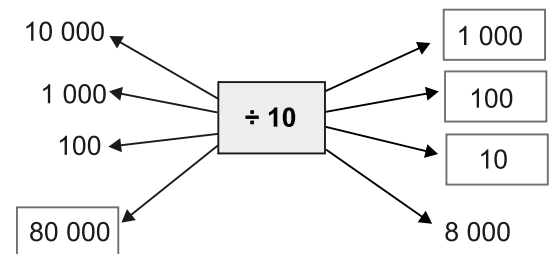
2.1

Input (a)	2	3	4	5	6
Input (b)	11	14	17	20	23

2.2

Input (x)	5	7	9	11	27
Output (y)	17	25	33	41	105

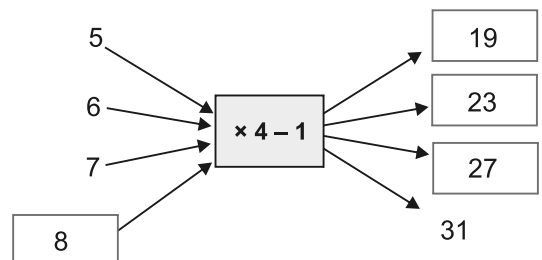
3.



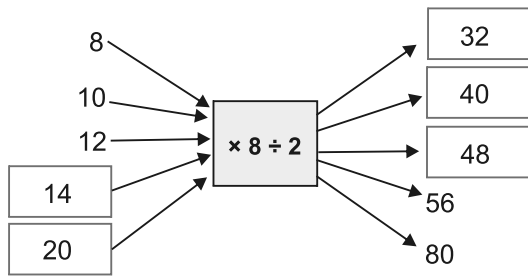
4.1 $3x + 2$

4.2 $a \div 5 + 4$

5.1



5.2



6.1

6

6.2

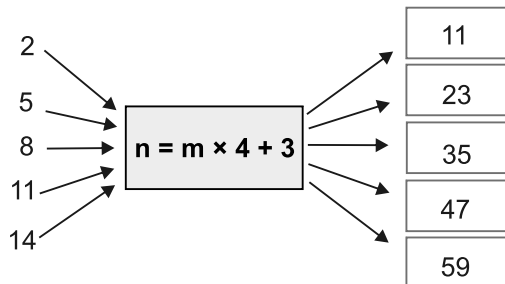
-3

3.

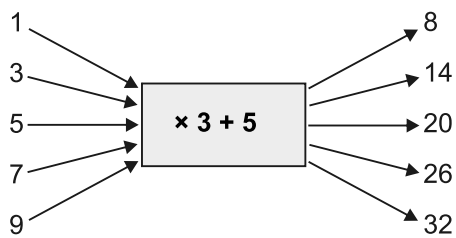
y	2	5	10	100
x	8	14	24	204

CONSOLIDATION AND EXTENSION

1.



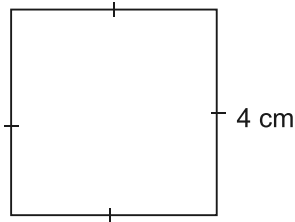
2.



8 Area & Perimeter of 2-D Shapes

Exercise 1

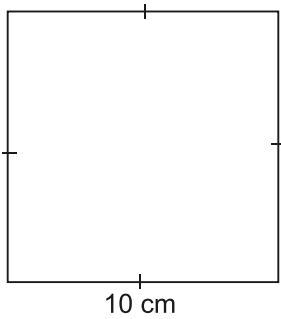
1.



$$\text{Area} = 4 \text{ cm} \times 4 \text{ cm} = 16 \text{ cm}^2$$

$$\text{Perimeter} = 4 \text{ cm} \times 4 = 16 \text{ cm}$$

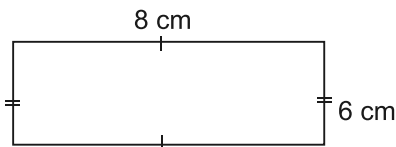
2.



$$\text{Area} = 10 \text{ cm} \times 10 \text{ cm} = 100 \text{ cm}^2$$

$$\text{Perimeter} = 10 \text{ cm} \times 4 = 40 \text{ cm}$$

3.



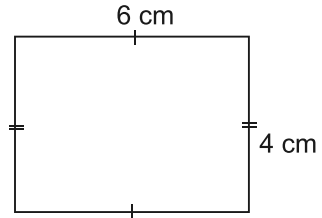
$$\text{Area} = 8 \text{ cm} \times 6 \text{ cm} = 48 \text{ cm}^2$$

$$\text{Perimeter} = 2(8 \text{ cm} + 6 \text{ cm})$$

$$= 2 \times 14 \text{ cm}$$

$$= 28 \text{ cm}$$

4.



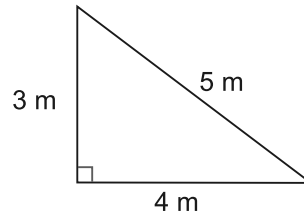
$$\text{Area} = 6 \text{ cm} \times 4 \text{ cm} = 24 \text{ cm}^2$$

$$\text{Perimeter} = 2(6 \text{ cm} + 4 \text{ cm})$$

$$= 2 \times 10 \text{ cm}$$

$$= 20 \text{ cm}$$

5.

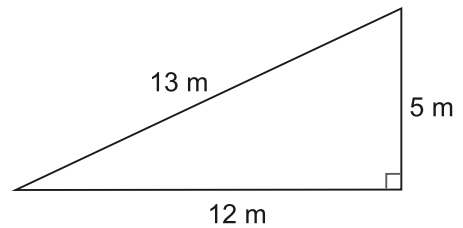


$$\text{Area} = \frac{1}{2} \times 3 \text{ m} \times 4 \text{ m} = 6 \text{ m}^2$$

$$\text{Perimeter} = 3 \text{ m} + 4 \text{ m} + 5 \text{ m}$$

$$= 12 \text{ m}$$

6.



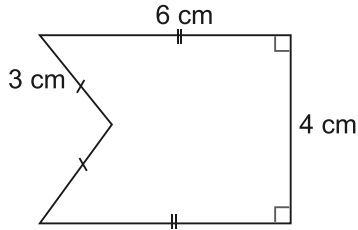
$$\text{Area} = \frac{1}{2} \times 12 \text{ m} \times 5 \text{ m} = 30 \text{ m}^2$$

$$\text{Perimeter} = 13 \text{ m} + 5 \text{ m} + 12 \text{ m}$$

$$= 30 \text{ m}$$

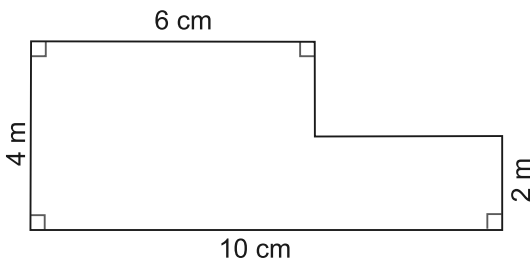
Exercise 2

1.



$$\begin{aligned} \text{Perimeter} &= 4 \text{ m} + 6 \text{ m} + 6 \text{ m} + 3 \text{ m} + 3 \text{ m} \\ &= 22 \text{ m} \end{aligned}$$

2.



$$\begin{aligned} \text{Perimeter} &= 2(10 \text{ cm} + 400 \text{ cm}) \\ &= 2 \times 410 \text{ cm} \\ &= 820 \text{ cm} \end{aligned}$$

OR

$$10 \text{ cm} + 200 \text{ cm} + 4 \text{ cm} + 200 \text{ cm} + 6 \text{ cm} + 400 \text{ cm} = 820 \text{ cm}$$

Exercise 3

- 1.1 Measure of 1 side
 $= 20 \text{ cm} \div 4$
 $= 5 \text{ cm}$
- 1.2 Measure of 1 side
 $= 48 \text{ cm} \div 4$
 $= 12 \text{ cm}$
- 1.3 Measure of 1 side
 $= 32 \text{ cm} \div 4$
 $= 8 \text{ cm}$
- 1.4 Measure of 1 side
 $= 4,8 \text{ cm} \div 4$
 $= 1,2 \text{ cm}$

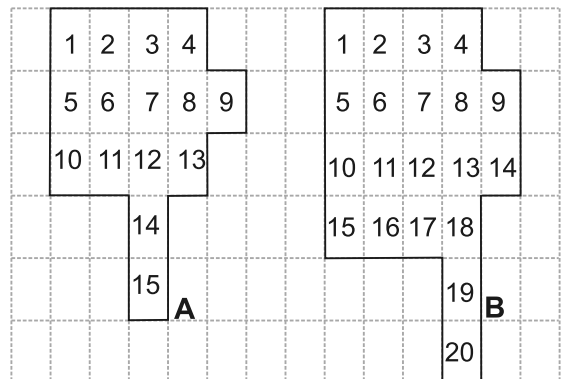
$$\begin{aligned} 2. \text{ Length} &= \frac{P}{2} - B \\ &= \frac{16}{2} - 3 \\ &= 8 \text{ cm} - 3 \text{ cm} \\ &= 5 \text{ cm} \end{aligned}$$

$$\begin{aligned} 3. \text{ Length} &= \frac{P}{2} - B \\ &= \frac{120 \text{ mm}}{2} - 20 \text{ mm} \\ &= 60 \text{ mm} - 20 \text{ mm} \\ &= 40 \text{ mm} \end{aligned}$$

Exercise 4

1. $15 \text{ cm} \times 8$
 $= 120 \text{ cm}$
2. $4.6 \text{ m} \times 3$
 $= 13,8 \text{ m}$
3. $P = 10 \text{ m} + 10 \text{ m} + 5,5 \text{ m}$
 $+ 5,5 \text{ m} = 31 \text{ m}$
 Length required
 $31 \text{ m} - 1 \text{ m (for gate)}$
 $= 30 \text{ m}$

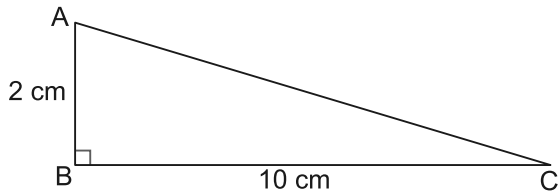
4. B has 5 more than A
 B is larger



- 5.1 length $= \frac{20}{4} \text{ cm}$
 $= 5 \text{ cm}$
- 5.2 length $= \frac{24}{4} \text{ m}$
 $= 6 \text{ m}$
- 6.1 $B = \frac{16}{8} \text{ cm}$
 $= 2 \text{ cm}$
- 6.2 $B = \frac{20}{2,5} \text{ cm}$
 $= 8 \text{ cm}$

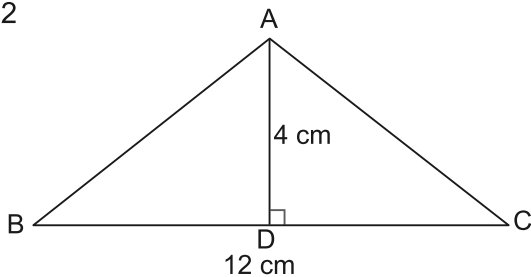
Exercise 5

1.1



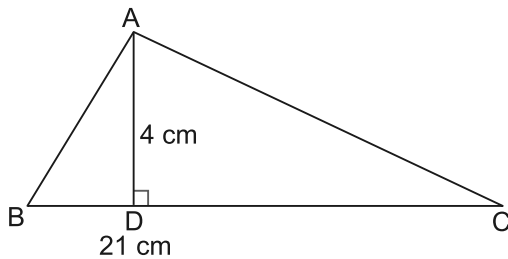
$$\frac{1}{2} \times 2 \text{ m} \times 10 \text{ m} = 10 \text{ m}^2$$

1.2



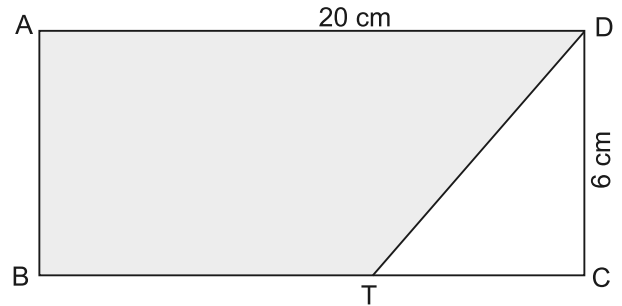
$$\frac{1}{2} \times 12 \text{ cm} \times 4 \text{ cm} = 24 \text{ cm}^2$$

1.3



$$\frac{1}{2} \times 4 \text{ cm} \times 21 \text{ cm} = 42 \text{ cm}^2$$

2.



$$\begin{aligned} \text{Area of trapezium} &= \left(\frac{1}{2} \text{ sum of a } \parallel \text{ lines}\right) \times \\ &\quad \text{perpendicular height} \\ &= \left(\frac{1}{2} \times 34 \text{ cm}\right) \times 6 \text{ cm} \\ &= 17 \text{ cm} \times 6 \text{ cm} \\ &= 102 \text{ cm}^2 \end{aligned}$$

OR

Area of rectangle ABCD

Area of $\triangle BTC$

$$\begin{aligned} (20 \text{ cm} \times 6 \text{ cm}) - \left(\frac{1}{2} \times 6 \text{ cm}\right) \times 6 \text{ cm} \\ = 120 \text{ cm}^2 - 18 \text{ cm}^2 \\ = 102 \text{ cm}^2 \end{aligned}$$

CONSOLIDATION AND EXTENSION

1.1 Perimeter

$$= 7 \text{ cm} + 8 \text{ cm} + 7 \text{ cm} = 22 \text{ cm}$$

Area is $\frac{1}{2}$ (base \times height)

$$\frac{1}{2} (8 \text{ cm} \times 6,2 \text{ cm})$$

$$= 24,8 \text{ cm}^2$$

1.2 Perimeter

$$= 6 \text{ cm} + 5,4 \text{ cm} + 8 \text{ cm} + 5 \text{ cm} = 24,4 \text{ cm}$$

Area is $(5 \text{ cm} \times 6 \text{ cm}) + (\frac{1}{2} \times 2 \text{ cm} \times 5 \text{ cm})$

$$= 30 \text{ cm} + 5 \text{ cm} = 35 \text{ cm}^2$$

1.3 Perimeter

$$= 4 \text{ cm} + 6 \text{ cm} + 6 \text{ cm} + 6 \text{ cm} + 10 \text{ cm} + 12 \text{ cm} = 44 \text{ cm}$$

Area is $12 \text{ cm} \times 4 \text{ cm} + 6 \text{ cm} \times 6 \text{ cm}$

$$= 84 \text{ cm}^2$$

1.4 Area of tiles

$$= 0,5 \text{ m} \times 0,5 \text{ m}$$

$$= 0,25 \text{ m}^2$$

Number of tiles needed

$$= \frac{40 \text{ m}^2}{0,25 \text{ m}^2}$$

$$= 160 \text{ tiles}$$

9 Surface Area & Volume of 3-D Objects

Exercise 1

1.1 Area of 1 face \times 6
 $10 \text{ cm} \times 10 \text{ cm} \times 6$
 $= 600 \text{ cm}^2$

1.2 $17 \text{ cm} \times 17 \text{ cm} \times 6$
 $289 \text{ cm}^2 \times 6$
 $= 1734 \text{ cm}^2$

2. $11 \text{ m} \times 11 \text{ m} \times 6$
 $121 \text{ m}^2 \times 6$
 $= 726 \text{ m}^2$

Exercise 2

1. $(2 \times L \times B) + (2 \times L \times H) + (2 \times B \times H)$
 $= (2 \times 15 \text{ cm} \times 8 \text{ cm}) +$
 $(2 \times 15 \text{ cm} \times 7 \text{ cm}) + (2 \times 8 \text{ cm} \times 7 \text{ cm})$
 $= 240 \text{ cm}^2 + 210 \text{ cm}^2 + 112 \text{ cm}^2$
 $= 562 \text{ cm}^2$

2. $2 \times 19 \text{ m} \times 9 \text{ m} = 342 \text{ m}^2$
 $2 \times 19 \text{ m} \times 13 \text{ m} = 494 \text{ m}^2$
 $2 \times 9 \text{ m} \times 13 \text{ m} = 234 \text{ m}^2$
TSA = 1070 m^2

Exercise 3

1. TSA = $13 \text{ cm} \times 13 \text{ cm} \times 6$
 $= 169 \text{ cm}^2 \times 6$
 $= 1014 \text{ cm}^2$

2. TSA : $= 2 \times 15 \text{ m} \times 12 \text{ m} = 360 \text{ m}^2$
 $= 2 \times 15 \text{ m} \times 8 \text{ m} = 240 \text{ m}^2$
 $= 2 \times 8 \text{ m} \times 12 \text{ m} = 192 \text{ m}^2$
TSA = 792 m^2

3. TSA = $2 \times 10 \text{ cm} \times 8 \text{ cm} = 160 \text{ cm}^2$
 $= 2 \times 10 \text{ cm} \times 8 \text{ cm} = 160 \text{ cm}^2$
 $= 2 \times 8 \text{ cm} \times 8 \text{ cm} = 128 \text{ cm}^2$
TSA = 448 cm^2

Exercise 4

1. $V = 21 \text{ cm} \times 21 \text{ cm} \times 21 \text{ cm} = 9\,261 \text{ cm}^3$

2. $V = 17 \text{ m} \times 17 \text{ m} \times 17 \text{ m} = 4913 \text{ m}^3$

3. $V = 41 \text{ cm} \times 41 \text{ cm} \times 41 \text{ cm} = 68\,921 \text{ cm}^3$

Exercise 5

1. $V = 17 \text{ cm} \times 16 \text{ cm} \times 10 \text{ cm} = 2720 \text{ cm}^3$

2. $V = 14 \text{ m} \times 13 \text{ m} \times 11 \text{ m} = 2002 \text{ m}^3$

Exercise 6

1. $V = 36 \text{ cm} \times 24 \text{ cm} \times 15 \text{ cm}$
 $= 12\,960 \text{ cm}^3$

Capacity = $12960 \text{ ml} = 12,960 \text{ litre}$

2. $H = \frac{V}{\text{area}}$ of base

$$= \frac{160}{5 \times 5}$$

$$= \frac{160}{25} = 6,4 \text{ m}$$

3. V of water = $25 \text{ m} \times 20 \text{ m} \times (\frac{3}{4} \text{ of } 8 \text{ m})$
 $= 25 \text{ m} \times 20 \text{ m} \times 6 \text{ m}$
 $= 3\,000 \text{ m}^3$
 $= 3000 \text{ l}$

Exercise 7

1. $75\,0000 \text{ cm}^2$

2. $68\,100 \text{ mm}^2$

3. $750\,000 \text{ cm}^3$

4. 60 cm^3

5. $7\,867\,000 \text{ cm}^3$

2. $14 \text{ cm} \times 14 \text{ cm} \times 6$
 $= 196 \text{ cm}^2 \times 6$
 $= 1176 \text{ cm}^2$

3. $2 \times 4 \text{ cm} \times 35 \text{ cm} = 280 \text{ cm}^2$
 $2 \times 4 \text{ cm} \times 25 \text{ cm} = 200 \text{ cm}^2$
 $2 \times 35 \text{ cm} \times 25 \text{ cm} = 1750 \text{ cm}^2$
 TSA = $2\,230 \text{ cm}^2$

4. $r^3 = 1734 \div 6 \text{ cm}^2 = 289$
 Side measure
 $289 = 17 \text{ cm}$

5. Volume is $13 \text{ m} \times 13 \text{ m} \times 13 \text{ m}$
 $= 2197 \text{ m}^3$

6. $V = 37 \text{ cm} \times 21 \text{ cm} \times 17 \text{ cm}$
 $= 13\,209 \text{ cm}^3$

7. Volume = $8 \text{ m} \times 7 \text{ m} \times 3 \text{ m}$
 $= 168 \text{ m}^3$
 Capacity = 168 litres

8. $L = 6x$ $B = 2x$ $H = 3x$
 $6x \times 2x \times 3x = 288$

$$36x^3 = 288$$

$$x^3 = \frac{288}{36}$$

$$x^3 = 8$$

$$x^2 = 2$$

The dimensions are $L = 12 \text{ cm}$

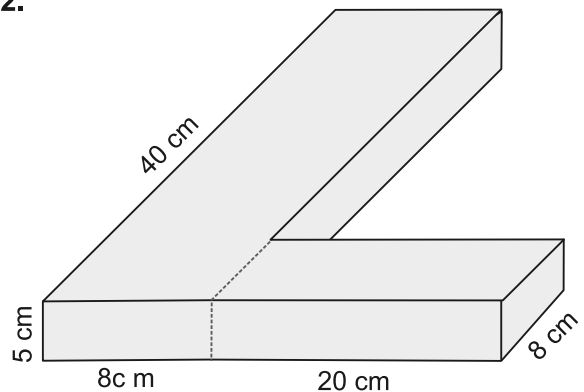
$B = 4 \text{ cm}$

$H = 6 \text{ cm}$

CONSOLIDATION AND EXTENSION

1. $2 \times 12 \text{ cm} \times 8 \text{ m} = 192 \text{ m}^2$
 $2 \times 12 \text{ cm} \times 10 \text{ m} = 240 \text{ m}^2$
 $2 \times 8 \text{ cm} \times 10 \text{ m} = 160 \text{ m}^2$
Total 592 m^2

2.



Volume of A + Volume of B
 $(40 \text{ cm} \times 8 \text{ cm} \times 5 \text{ cm}) +$
 $(20 \text{ cm} \times 8 \text{ cm} \times 5 \text{ cm})$
 $1\,600 \text{ cm}^3 + 800 \text{ cm}^3$
 $= 2400 \text{ cm}^3$

3. Volume
 $= 50 \text{ cm} \times 30 \text{ cm} \times 40 \text{ cm} = 60\,000 \text{ cm}^3$
 Capacity
 $= 60\,000 \text{ m}^3$
 Leaks at 500 m^3 per hour
 No. of hours = $\frac{60\,000}{500} = 120$ hours

10 Numeric & Geometric Patterns

Exercise 1

1.1 $21/23$
 $2n + 11$

1.2 $70/64$
 $-6n + 106$

1.3 $7\frac{1}{2} / 7$

$-\frac{1}{2}n + 10\frac{1}{2}$

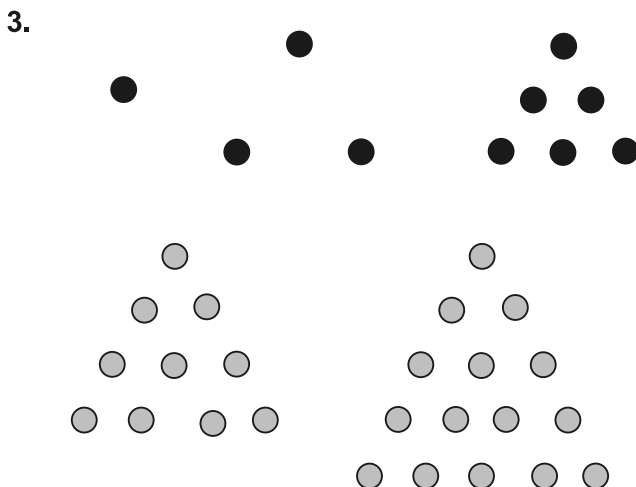
1.4 $1,9/2,2$
 $0,3n + 0,4$

2.1 $324/972$
Multiply each one by 3

2.2 $25; 12\frac{1}{2}$
Divide each one by 2

2.3 $6; 60$
Multiply each one by 10

2.4 $2^3 2^2$
 2^{8-1}
 2^{8-2}
 2^{8-3}
Rule 2^{8-n}



4. $10; 15; 21$

4.1 1
 $1 + 2$
 $1 + 2 + 3$
 $1 + 2 + 3 + 4$

5.1 You double the number that you add.

5.2 $47 + 48 = 95$
 $95 + 96 = 191$
 $191 + 192 = 383$

6. $26; 15; 2$

Exercise 2

1.1	Position in sequence	1	2	3	4
	Term	9	13	17	21

1.2	Position in sequence	1	2	3	4	5
	Term	2	5	10	17	26

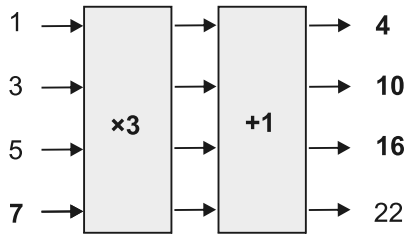
2.1

Position in sequence	1	2	3	4	Rule	10
Term	7	10	13	16	$\times 3 + 4$	34

2.2

Position in sequence	1	2	3	4	Rule	10
Term	5	9	13	17	$\times 4 + 1$	41

5.

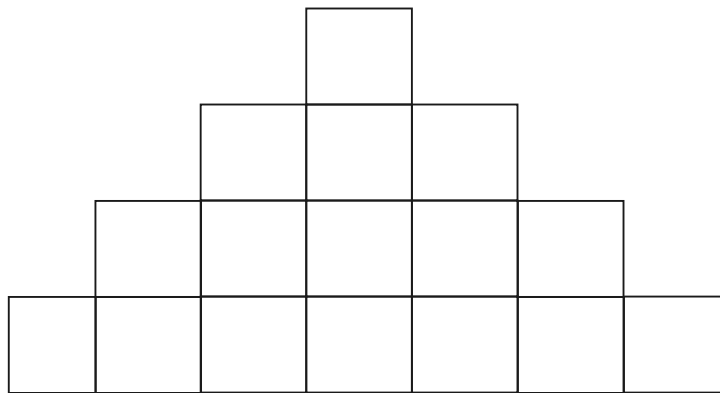


6.

Input	1	2	3	4	Rule	10	17
Output	9	14	19	24	$\times 5 + 4$	54	89

CONSOLIDATION AND EXTENSION

1.1



Pattern 4

1.2 $10 \times 10 = 100$

2.1 Subtract 7

2.2 Divide by 2

2.3 Multiply by 10

2.4 Divide by 2

3.1

Position in sequence	1	2	3	4		10
Term	1	4	9	16		

Square numbers

3.2

Position in sequence	1	2	3	4		10
Term	7	14	21	28		

Multiples of 7

11 Functions & Relationships

Exercise 1

1.1 $y = 3x + 4$
 $= 3(2) + 4$
 $= 6 + 4$
 $= 10$

1.2 $y = 3x + 4$
 $= 3(7) + 4$
 $= 21 + 4$
 $= 25$

1.3 $y = 3x + 4$
 $= 3(13) + 4$
 $= -39 + 4$
 $= -35$

2.1 $y = 5x - 3$
 $= 5(22) - 3$
 $= 110 - 3$
 $= 107$

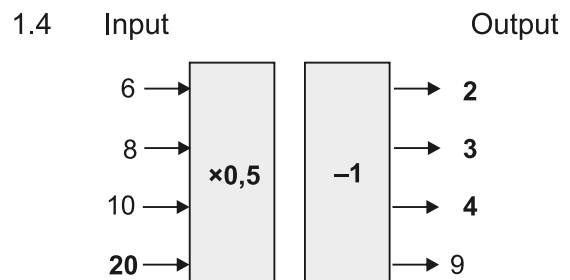
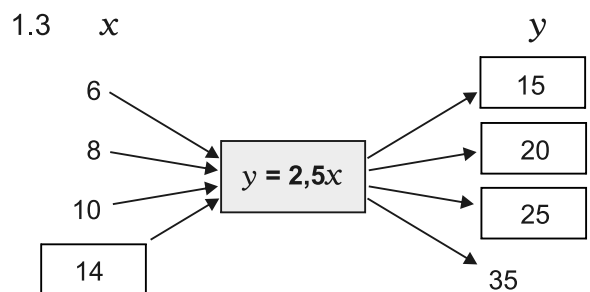
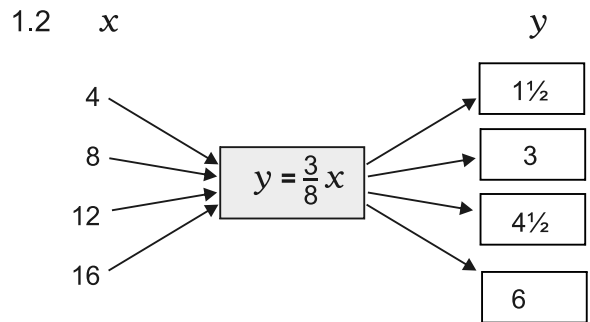
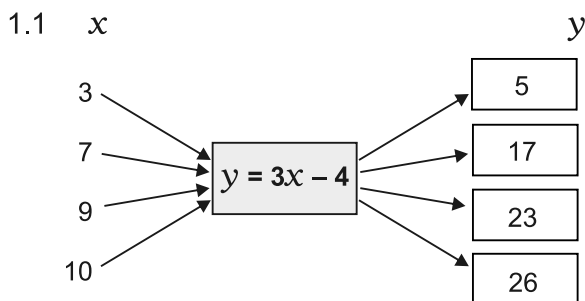
2.2 $y = 5x - 3$
 $= 5(57) - 3$
 $= 285 - 3$
 $= 282$

2.3 $y = 5x - 3$
 $= 5(-112) - 3$
 $= -560 - 3$
 $= -563$

3.1 $A = \frac{1}{2} \times b \times h$
 $= \frac{1}{2} \times 216 \text{ mm} \times 217 \text{ mm}$
 $= 23\,436 \text{ mm}^2$

3.2 $A = \frac{1}{2} b \times h$
 $2100 = \frac{1}{2} b \times 70 \text{ m}$
 $4200 = 70 b$
 $70 b = 4200$
 $b = \frac{4200}{70}$
 $= 60$

Exercise 2



Exercise 3

1.1

x	2	4	6	8	15	27
y	-1	1	3	5	12	24

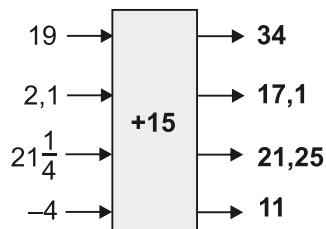
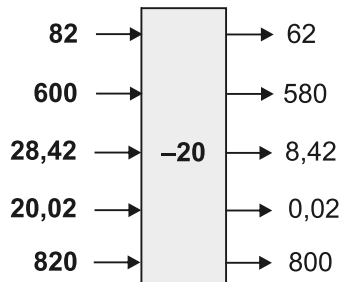
1.2

x	2	4	6	8	24	48
y	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	9	15

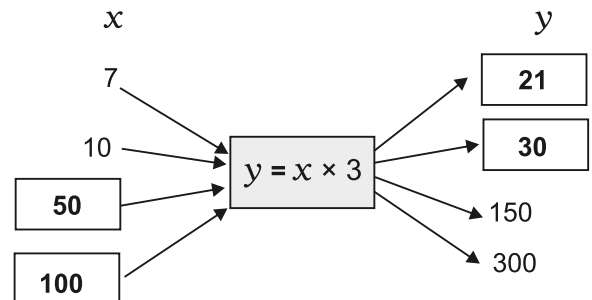
1.3

x	$x + 7$
3	10
5	12
8	15
10	17
20	27

CONSOLIDATION AND EXTENSION

1. *Input* *Output*2. *Input* *Output*

3.



4.

y	6	0,8	-3	$\frac{1}{5}$	1,2
x	10	4,8	1	$4\frac{1}{5}$	5,2

12 Algebraic Expressions

Exercise 1

1.1 $V = x$
 NC = 6
 Constant 5

1.2 $V = y$
 NC = $\frac{3}{2}$
 No constant term

2.1 $7 + 5$

2.6 $3x$

2.2 $8y$

2.7 $25 > (6 + 10)$

2.3 $16 - 5$

2.8 $\sqrt{64} > \sqrt[3]{64}$

2.4 $\frac{n}{m}$

2.9 $m + 9$

2.5 $x + 4$

Exercise 2

1.

	Variable	Constant
$x^2 - 4x + 3$	x	+3
$7m^2 - 4m - 1$	m	-1
$-4m^2 - 1 - 6m^2$	m	-1
$7b - 4b^2 - 3$	b	-3
$-6^3 + 4t + 1$	t	+1/-6³

2.1 $4 + 2 = 6$

2.3 $4 - 2 = 2$

2.2 $\frac{4}{2} = 2$

2.4 $4(2) = 8$

3.1 $y = 19 + 19 = 38$

3.3 $\frac{30}{3} - 5 = 5$

3.2 $16 - 4 = 12$

3.4 $5(12) = 60$

4.1 $x = 6(5) + 4$
 $x = 30 + 4$
 $x = 34$

4.3 $x = \frac{4(5)}{3}$
 $= \frac{20}{3}$
 $= 6,66$

4.2 $= 2^5 - 7 = x$
 $= 32 - 7$
 $= 25$

5.1

Input m	2	3	4	5	6
Input n	2	7	14	23	34

5.2

Input (x)	5	10	15	24	25
Input (y)	19	34	49	76	79

Exercise 3

1.1 Son's age is x . Mother's age is $x + 25$.

1.2 Daughter's age is x . Father is $x + 30$.

2.

Expression	Variable	Constant term
$2^x - 3$	x	3
$4x - 1$	x	-1
$g^4 - 3$	g	-3

- 3.1 The sum of 5 and a certain number.
3.2 The product of 3 and a certain number.
-

CONSOLIDATION AND EXTENSION

- 1.1 $v = x$ $c = 6$
1.2 $v = y$ $c = 3$
1.3 $v = p + q$ No constant term
1.4 $p + q$ No constant term
- 2.1 $3b$
2.2 xyz
2.3 $abcd$
2.4 $\frac{x}{y}$

4.1 $= 2 + 3 + 3(1)$
 $= 2 + 3 + 3$
 $= 8$

4.2 $= 2^2 - 3(3) + 3$
 $= 4 - 9 + 3$
 $= -2$

- 3.1 $x + 6$
3.2 $x - y$
3.3 $4x$
3.1 $\frac{n}{m}$

13 Algebraic Equations

Exercise 1

1.1 $x - 4 = 12$ 1.4 $5x - 6 = 44$
 1.2 $\frac{x}{2} = 18$ 1.5 $9x = 45$
 1.3 $3x - 6 = 9$ 1.6 $x + 5 = 11$

2.1 $R100 - R25 = R75$

2.2 $\frac{x}{2} = R18$
 $x = 18 \times 2$
 $x = R36$

She started with R36

2.3 $3x + 5 = 32$
 $x = 9$

He thought of 9.

3.1 2 3.5 3
 3.2 13 3.6 2
 3.3 4 3.7 4
 3.4 7

Exercise 2

1.

Equation	Variable	Constant term
$3x - 1 = 5$	x	$-1/5$
$2a + 1 = 5$	a	$1/5$
$\frac{9}{2} = 3$		$\frac{9}{2}/3$
$2b - 1 = -1$	b	$-1/-1$

2.1 $a = 10 + 7 = 17$

2.2 $x - 3 = -7$
 $x = -7 + 3$
 $x = -4$

2.3 $2a - 3 = 4$
 $2a = 4 + 3$
 $2a = 7$ or
 $2 \times a = 7$
 $a = \frac{7}{2}$ or $7 \div 2$
 $a = 3 \frac{1}{2}$
 Accept: 3,5

Exercise 3

1.1 $a = 10$

2.1 $y = 3x - 1$
 $y = 3 \times 4 - 1$
 $y = (12 - 1) = 11$

2.2 $y = 3x - 1$
 $y = 3(6) - 1$
 $y = 18 - 1$
 $y = 17$

2.3 $y = 3x - 1$
 $y = 3(26) - 1$
 $y = 78 - 1$
 $y = 77$

2.4 $y = (3)^2 + 1$
 $9 + 1 = 10$

3. The certain number = x
 $\therefore 3 \times x + 7 = 43$
 $3x = 43 - 7$
 $3x = 36$
 $x = 36 \div 3$
 $x = 12$
TEST: $3 \times 12 + 7 = 43$
 $43 = 43$

4.1 $A = L \times B$
 10×6
 $= 60 \text{ m}^2$

4.2 $P = 2(L + B)$
 $2(4 + 3,5)$
 $= 2(7,5)$
 $= 15\text{m}$

4.3 $V = L \times B \times H$
 $8\text{m} \times 6\text{m} \times 5\text{m}$
 $= 240 \text{ m}^3$

CONSOLIDATION AND EXTENSION

1.1 $y = 10 - 4 = 6$

1.2 $y = 12 \div \frac{3/12}{3} = 4$

1.3 $x = 4 + 6 = 10$

1.4 $5y = 18 - 5y = 18 - 3 = \frac{15}{3} = 3$

1.5 $x = 4 \times 5 = 20$

1.6 $\frac{x}{3} = 0 + 6$

$x = 6 \times 3 = 18$

2.1 $x + 5 = 9$

$x = 9 - 5$

$x = 4$

2.2 $x - 7 = 14$

$x = 14 + 7$

$= 21$

Also Accept: $7 - x = 14$

$-x = 7$

$x = -7$

2.3 $8x = 32$

$x = \frac{32}{8} = 4$

2.4 $x \div 4 = 5$

$x = 5 \times 4$

$x = 20$

3.1 $x = 4(4) = 16$

3.2 $x = 3(4) - 10 = 12 - 10 = 2$

3.3 $x = (4)^2 - 10 = 16 - 10 = 6$

3.4 $x = 3(4) + 1 = 12 + 1 = 13$

3.5 $x = (4)^2 + 4 = 16 + 4 = 20$

4.

Input (x)	1	3	6	8	10	12
Input (y)	-3	5	32	60	96	140

5.1 $x \times 2 - 7 = 25$

$2x - 7 = 25$

$2x = 25 + 7$

$2x = 32$

$x = \frac{32}{2} = 16$

5.2 Sister = $x \therefore$ Lindo = $(x - 8)$

$x + (x - 8) = 20$

$2x - 8 = 20$

$2x = 20 + 8$

$2x = 28$

$x = 14$

\therefore Lindo = 6

5.3 $30x = 150$

$x = 150 \div 30$

$= 15 \div 3$

$= 5$

5.4 $\frac{x}{2} + 10 = 100$

$x \div 2 = 100 - 10$

$x \div 2 = 90$

$x = 90 \times 2$

$x = 180$

TEST: $\frac{180}{2} = 90$

$90 + 10 = 100$

5.5 Let Siya = x

\therefore Vusi = $x + 10$

$x + (x + 10) = 40$

$2x + 10 = 40$

$2x = 40 - 10$

$2x = 30$

$x = \frac{30}{2}$

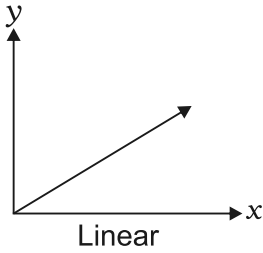
$x = 15$

\therefore Siya = 15

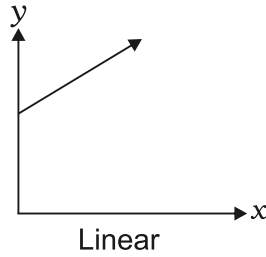
14 Graphs

Exercise 1

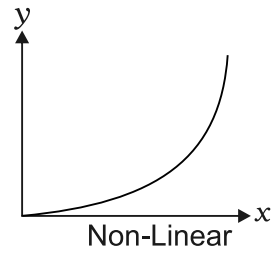
1.1



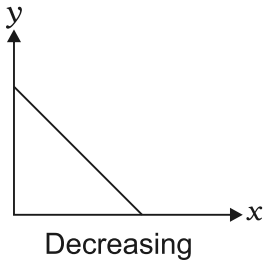
1.2



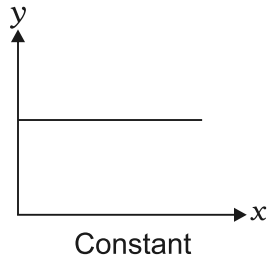
1.3



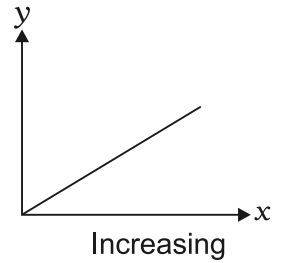
2.1



2.2



2.3



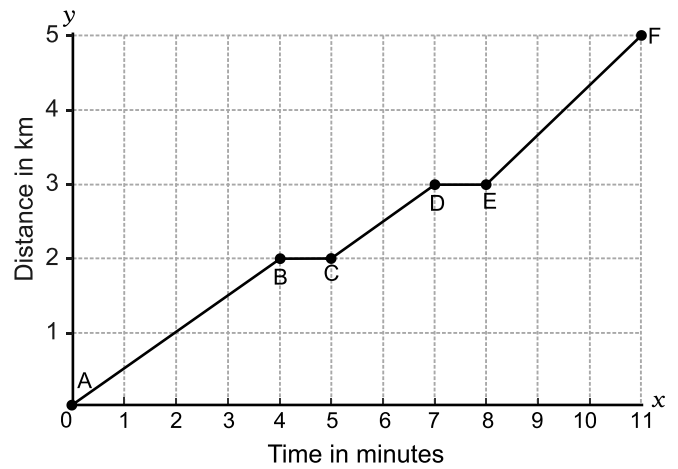
3.

3.1 11 minutes

3.3 1 minute

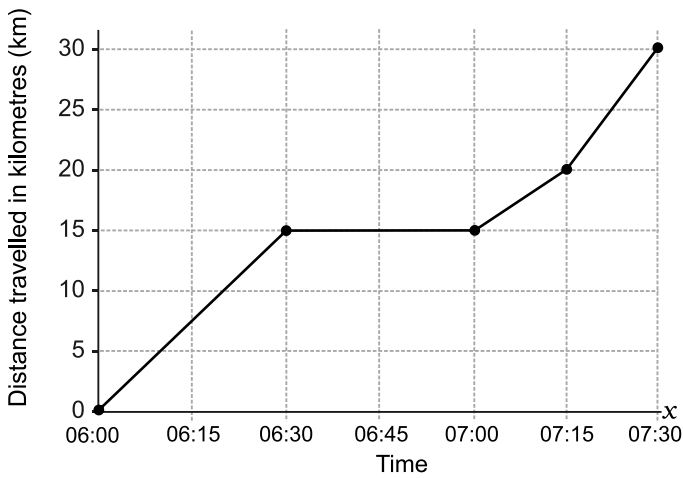
3.2 5 km

3.4 2 km



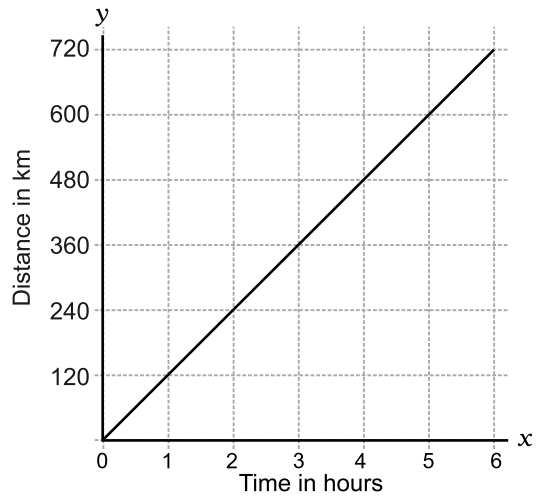
Exercise 2

1.



- | | |
|------------|-----------------------------------|
| 1.1 y | 1.5 07:30 |
| 1.2 x | 1.6 30 min/ $\frac{1}{2}$ an hour |
| 1.3 linear | 1.7 60 min/1 hour |
| 1.4 06:00 | |

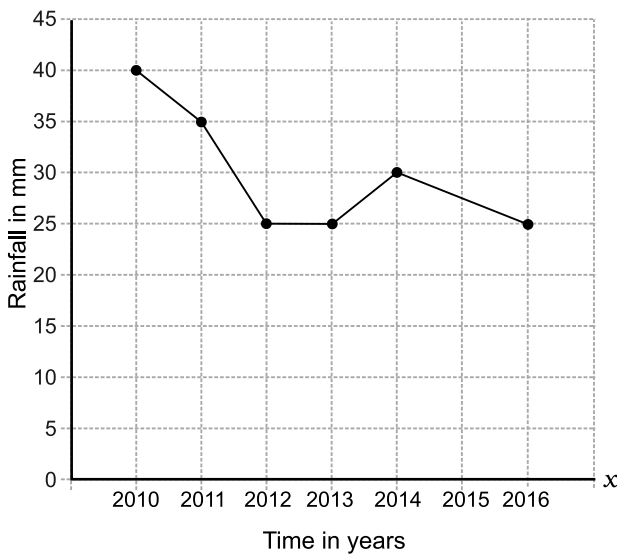
2.



- | | |
|----------------|-----------------------------|
| 2.1 y | 2.5 $720 \div 6 = 120$ km/h |
| 2.2 x | 2.6 17:00 or 5 pm |
| 2.3 linear | 2.7 360 km |
| 2.4 Increasing | 2.8 $3\frac{1}{2}$ hours |

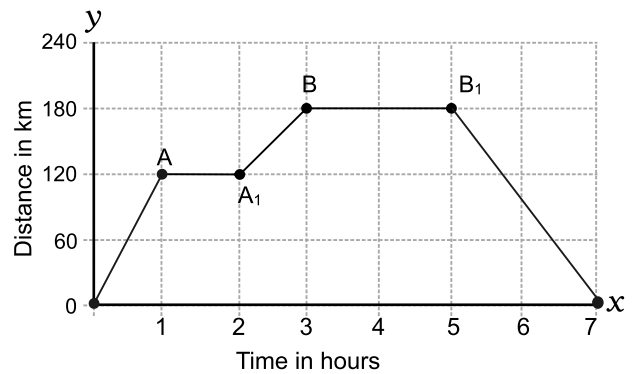
Exercise 3

1.



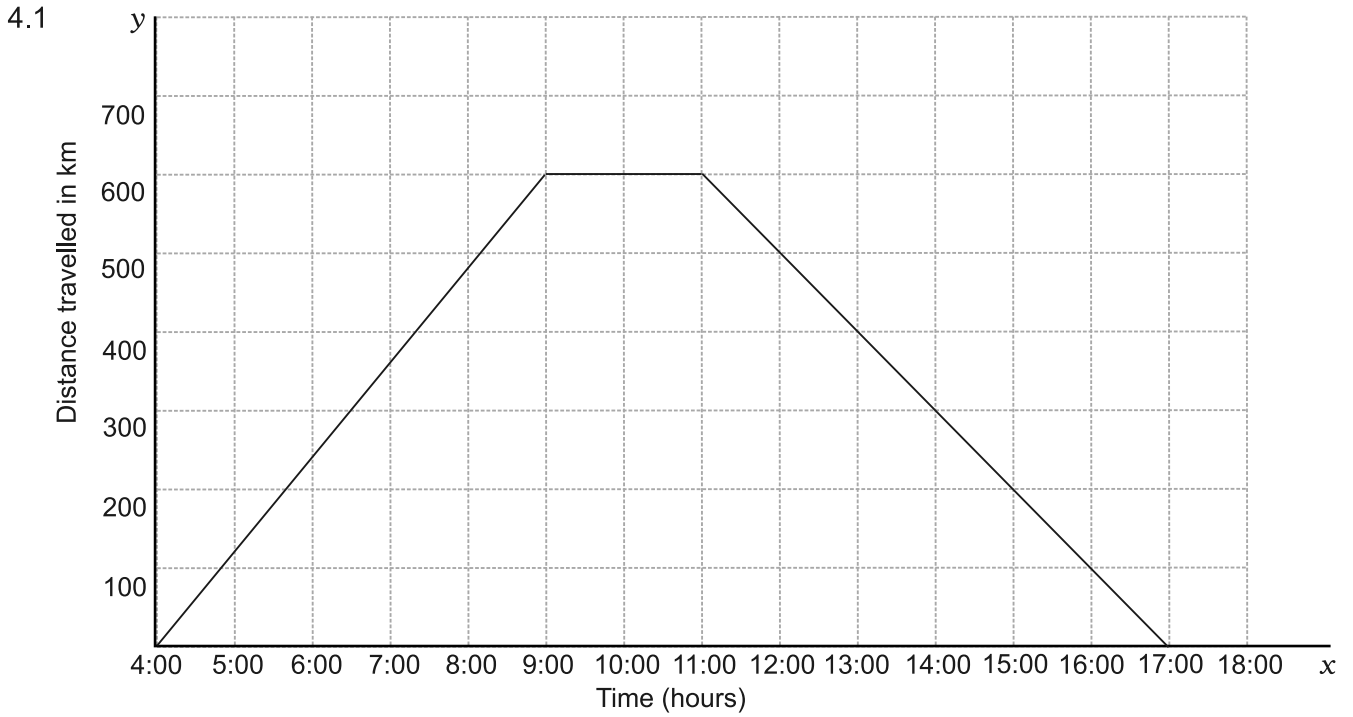
- | | |
|------------|----------------------|
| 1.1 x | 1.5 2012; 2013; 2016 |
| 1.2 y | 1.6 2014 |
| 1.3 linear | 1.7 40 mm |
| 1.4 2010 | 1.8 2012; 2013; 2016 |

2.



- | | |
|--------------|-------------------|
| 2.1 linear | 2.5 1 hour |
| 2.2 120 km | 2.6 60 km |
| 2.3 1 hour | 2.7 90 km/h |
| 2.4 120 km/h | 2.8 15:00 or 3 pm |

Exercise 4

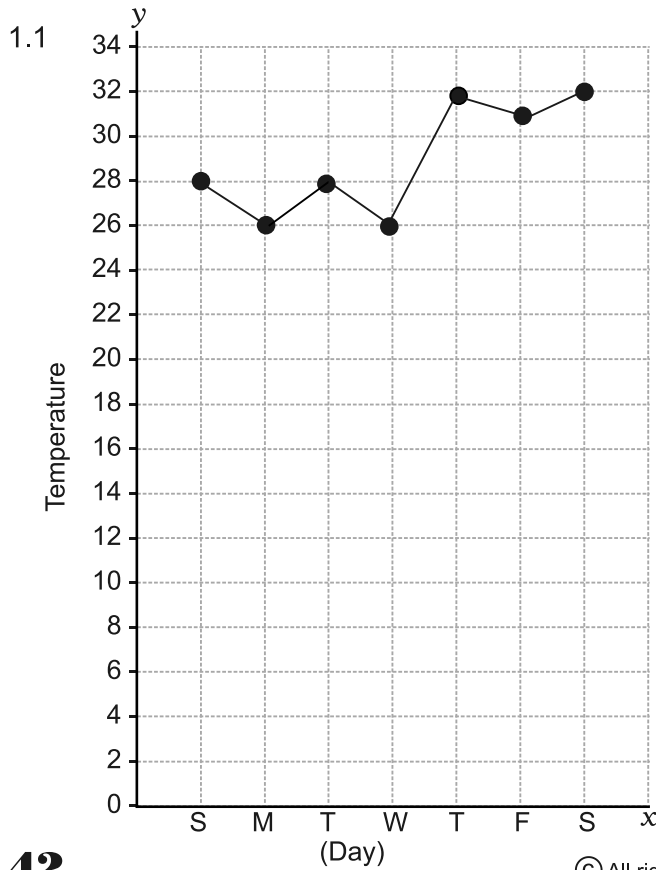


4.2 6 hours

4.3 17:00 or 5 pm

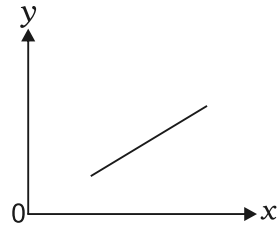
4.4 Linear

Exercise 5



CONSOLIDATION AND EXTENSION

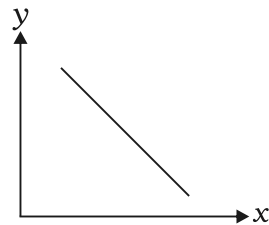
1.1



Linear

Non-linear;

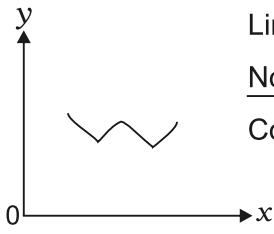
Constant



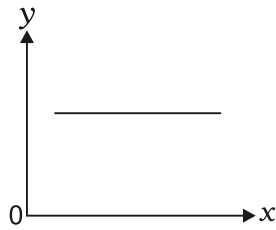
Linear

Non-linear;

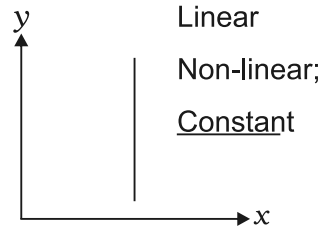
Constant



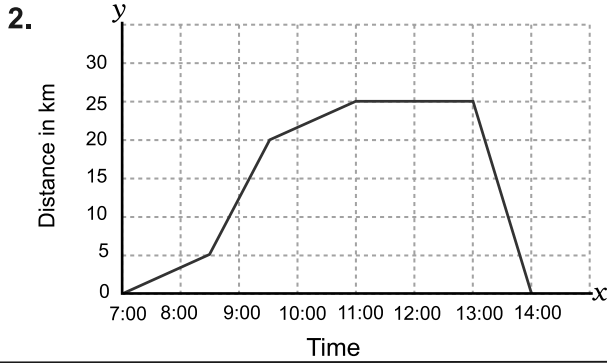
Linear
Non-linear;
Constant



Linear
Non-linear;
Constant



Linear
Non-linear;
Constant



- 2.1 07:00
- 2.2 4 km
- 2.3 2 hours

- 2.4 25 km
- 2.5 1 hour
- 2.6 Linear

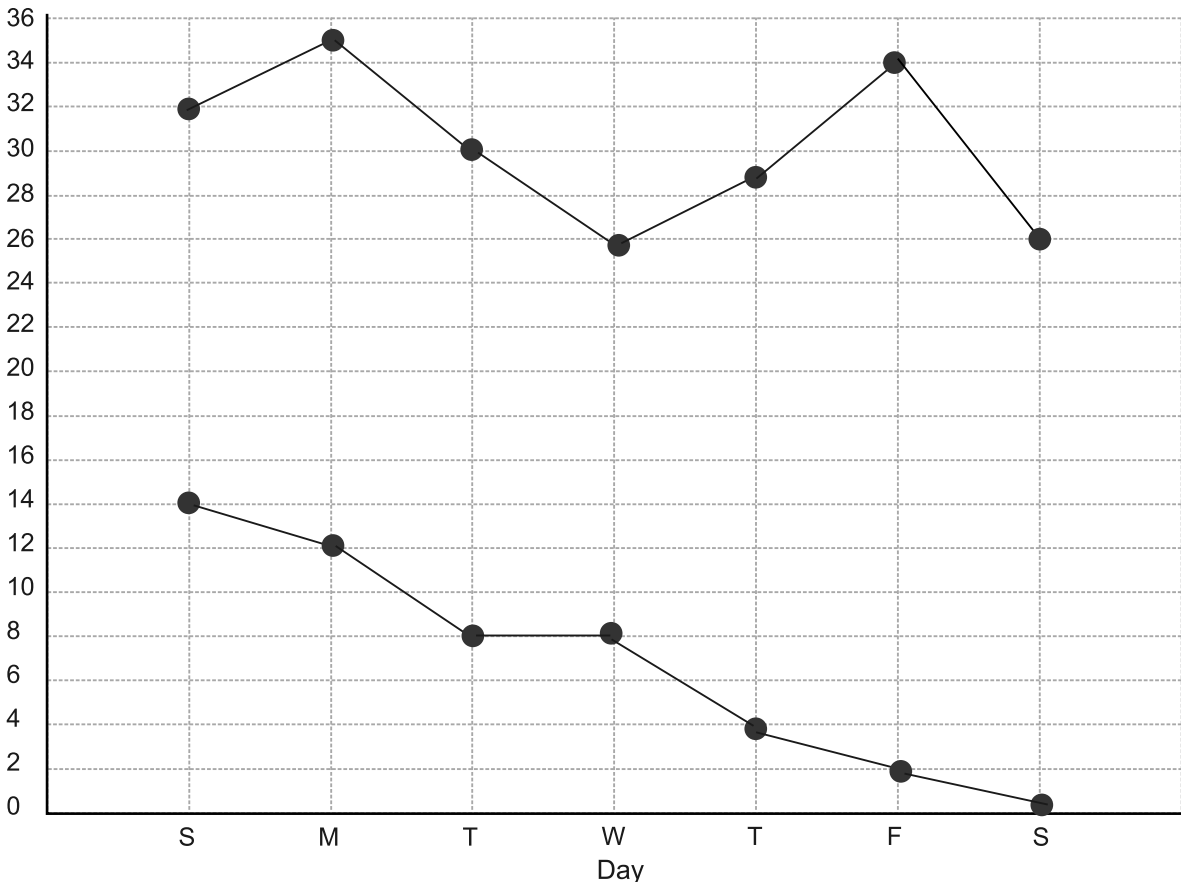
February 2016

3.

Day	S	M	T	W	T	F	S
Temperature (°C)	32	35	30	26	29	34	26

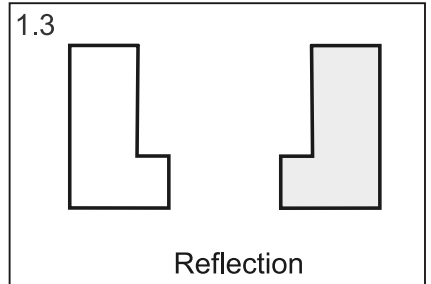
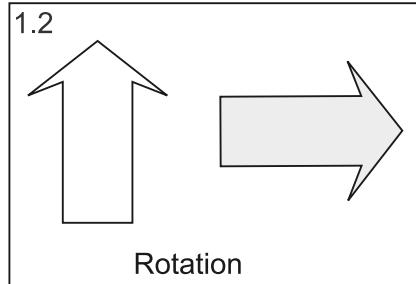
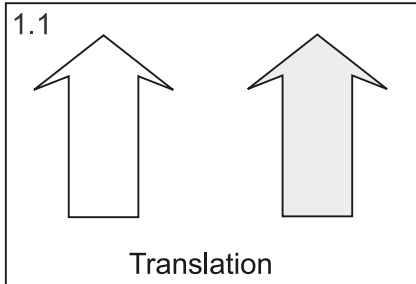
July 2016

Day	S	M	T	W	T	F	S
Temperature (°C)	14	12	8	8	4	2	0

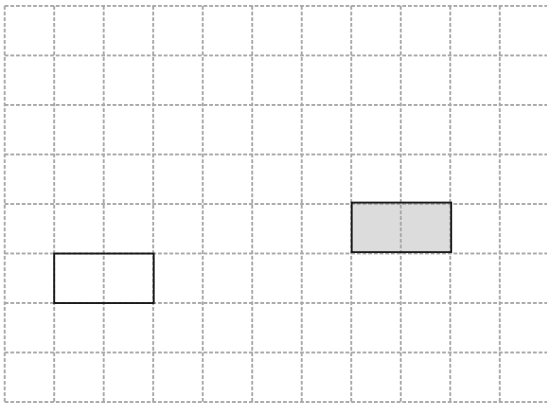


15 Transformation Geometry

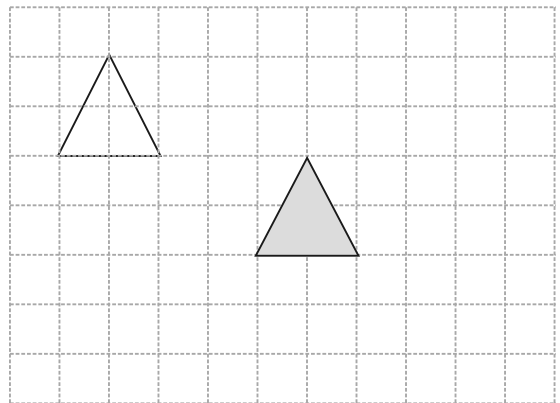
Exercise 1



2.1

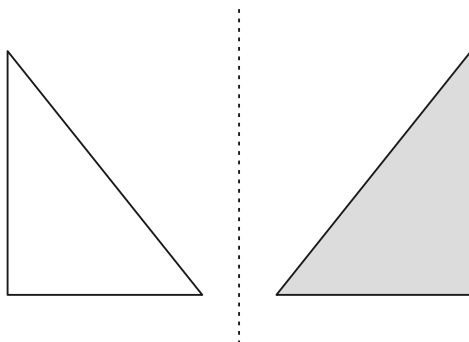


2.2

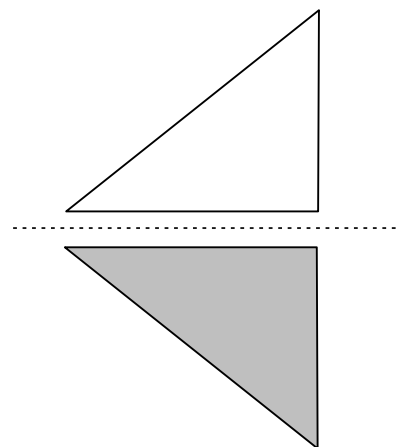


Exercise 2

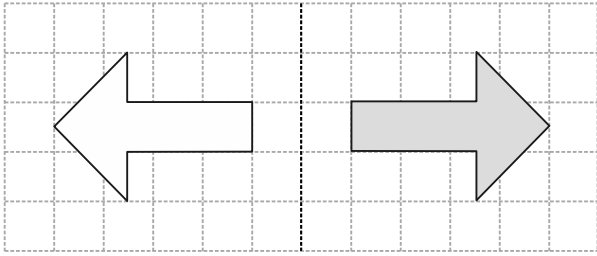
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1.2

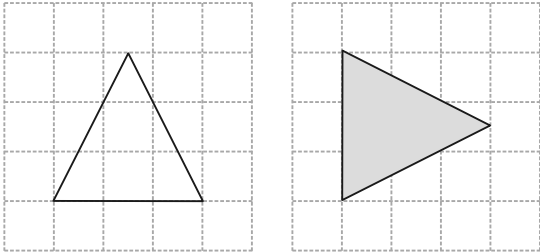


1.3

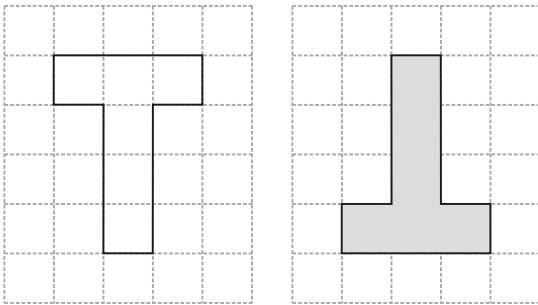


Exercise 3

1.1

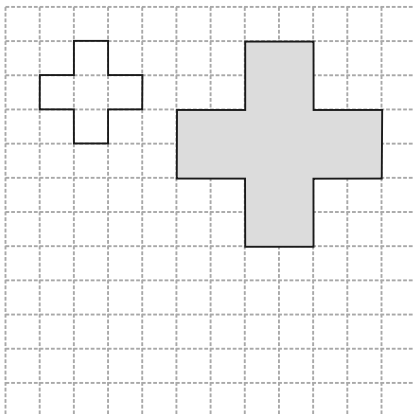


1.2

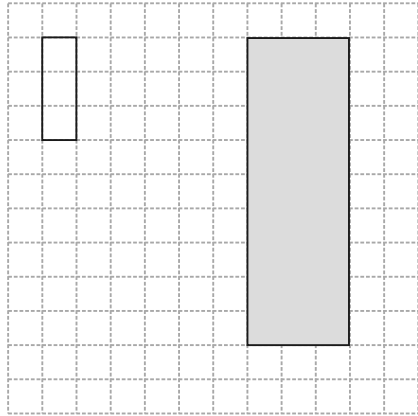


Exercise 4

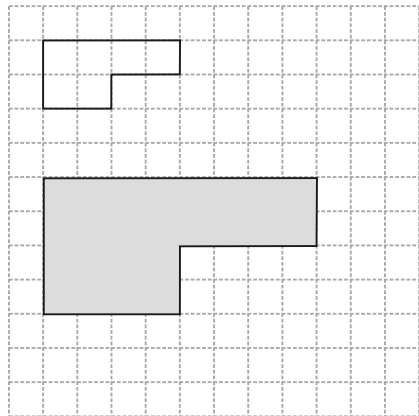
1.1



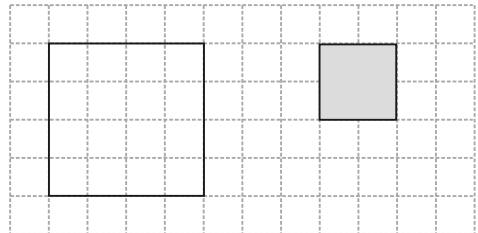
1.2



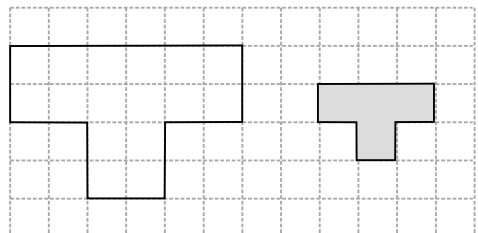
1.3



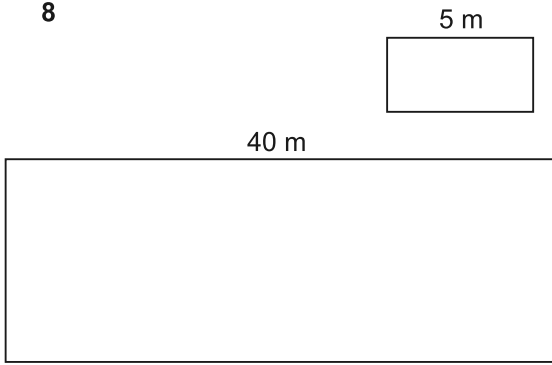
2.1



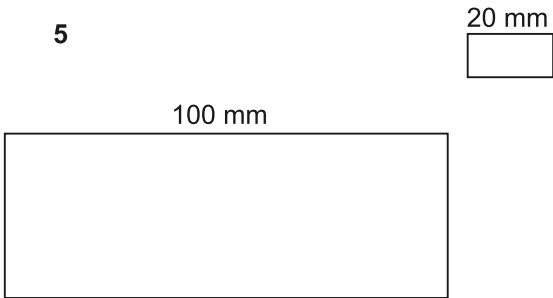
2.2



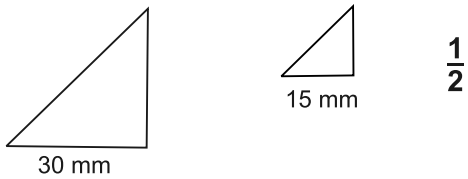
3.1 8



3.2 5



4.1

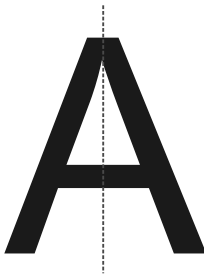


4.2



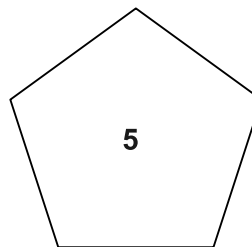
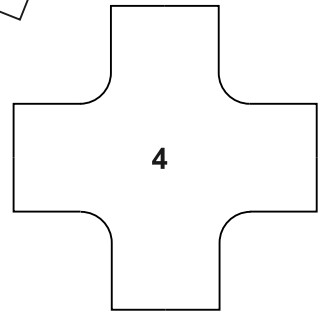
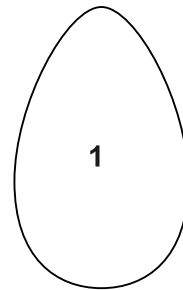
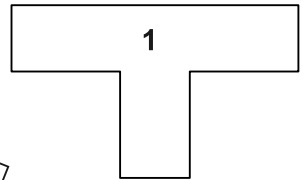
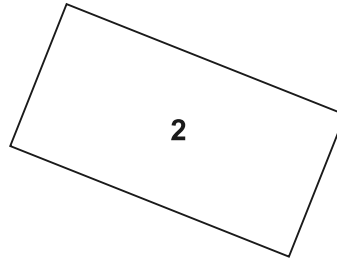
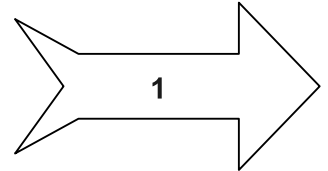
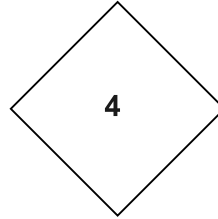
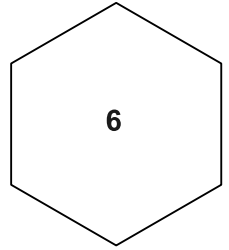
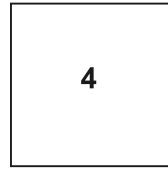
Exercise 5

1.1

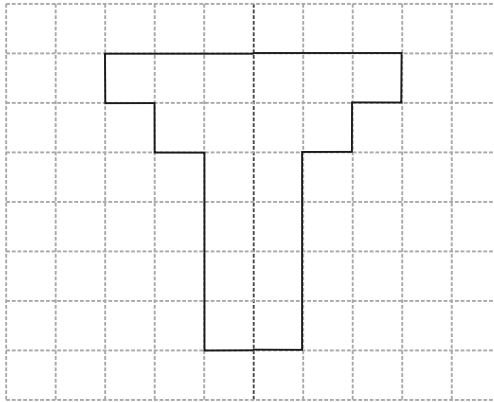


A B C D E
K M U V W Y

1.2

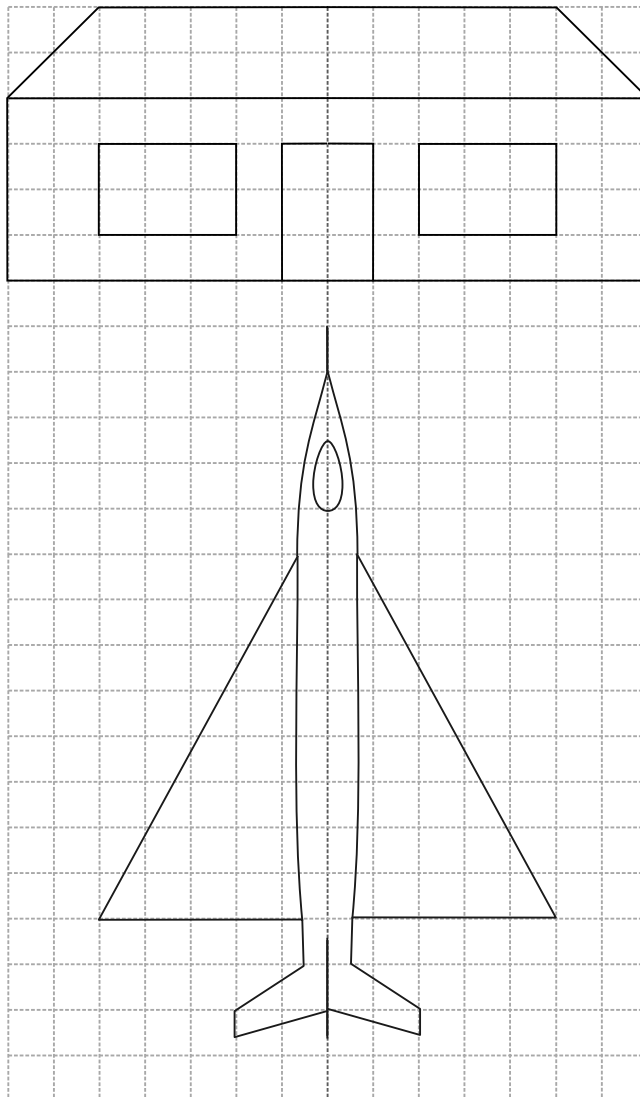


1.3

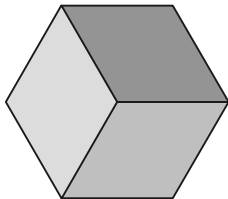
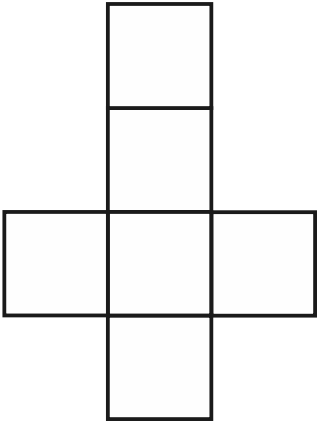
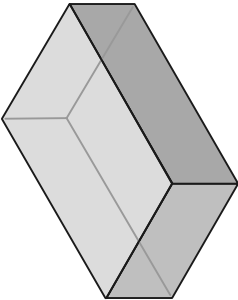
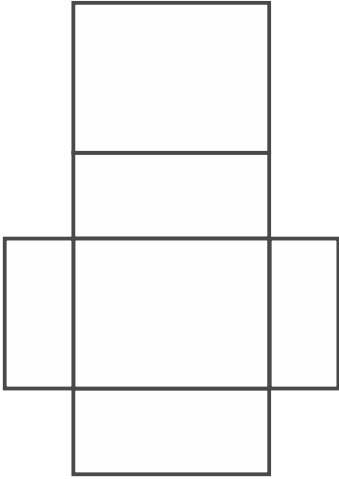
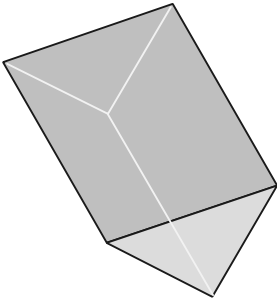
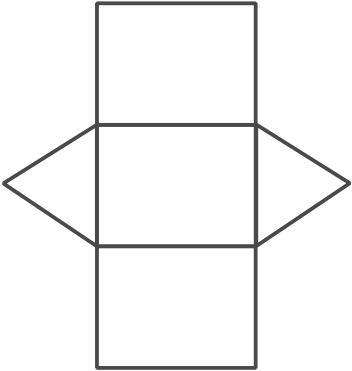


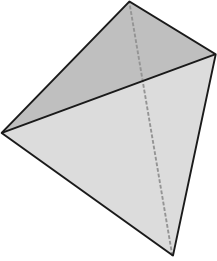
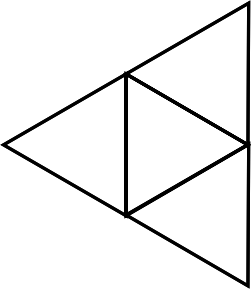
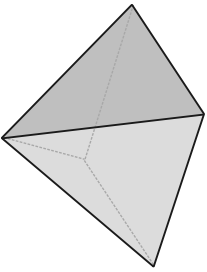
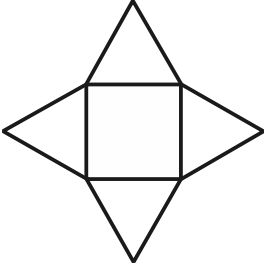
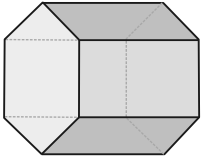
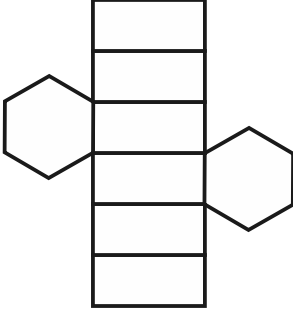
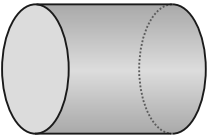
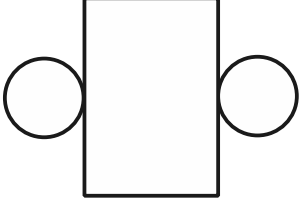
CONSOLIDATION AND EXTENSION

1.



16 Geometry of 3-D Shapes

Name	Shape	No. of faces	No. of edges	No. of vertices	Net (reduced in size)
Cube		6	12	8	
Rectangular Prism		6	12	8	
Triangular Prism		5	9	6	

Name	Shape	No. of faces	No. of edges	No. of vertices	Net (reduced in size)
Tetrahedron		4	6	4	
Squared based pyramid		5	8	5	
Hexagonal pyramid		8	18	12	
Cylinder		3	2	0	

17 Integers

Exercise 1

1. $-5; -4; -3; -2; -1; 0; 1$

2. $15; 10; 5; 0; -5; -10$

3. $3; 2; 1; 0; -1; -2$

4.1 4.2 4.3

5. $-6; -4; 0; 1$

6. $10; 5; 0; -1; -6$

Exercise 2

1.1 -2	2.1 -10	3. 6
1.2 -2	2.2 -9	4. 4th floor
1.3 -5	2.3 -8	

Exercise 3

1.1 $+8$	2.1 $-4 + 2 = -2$	3.1 $+2$
1.2 $+7$	2.2 $6 - 7 = -1$	3.2 4
1.3 -4	2.3 $4 - 3 = 1$	3.3 -5
1.4 -5	2.4 $-3 + 2 = -1$	3.4 $+4$
		4. 8°C

Exercise 4

1.1 3	2.1 $2 - 5 = -3$	3.1 $9 - 3 = 6$
1.2 -19	2.2 $-2 - 4 = -6$	$4 + 2 = 6$
		3.2 $-9 + 4 = -5$
		$-6 + 1 + -5$

Exercise 5

1.1 -54	1.5 17	1.9 4
1.2 24	1.6 -7	1.10 -4
1.3 9	1.7 5	1.11 -7
1.4 17	1.8 -5	1.12 7

2.1 $-5 \times 3 + (-5)(2) = -15 + (-10) = -25$

2.2 $3(-5+(-4)) = 3 \times -9 = -27$

Exercise 6

1. $25 - (-12)$ $25 + 12 = 37$	3. 5°
2. $3 - 7 = -4$	4. 17°

CONSOLIDATION AND EXTENSION

1.1 <input type="text" value="<"/>	1.3 <input type="text" value="<"/>	1.5 <input type="text" value=">"/>
1.2 <input type="text" value="<"/>	1.4 <input type="text" value="<"/>	1.6 <input type="text" value=">"/>

2.1 7	4.1 9 true
2.2 -2	4.2 $5 = 11$ False
2.3 -13	4.3 $1 + 6 = 7$ $4 + 3 = 7$ True
2.4 0	
2.5 0	

3.1 $-2 + 1 = -1$	5.1 -35
3.2 $4 - 2 = 2$	5.2 -24
3.3 $-6 - 5 = -11$	5.3 49
3.4 $9 + 10 = 19$	5.4 -6
3.5 $11 - 6 = 5$	5.5 3
	5.6 -9

6.1 -22	6.2 $10 - (-6)$ $10 + 6 = 16$
-----------	----------------------------------

18 Numeric & Geometric Patterns

Exercise 1

1.1 $8 ; 4 ; 0 ; -4 ; -8$

1.2 $-12 ; -9 ; -6 ; -3 ; 0$

1.3 $-12 ; -15 ; -18 ; -21 ; -24$

2.1.1 times 1 minus 5

2.1.2 $T_n = n - 5$

2.1.3 INTEGERS

2.1.4 $T_{20} = 20 - 5 = 15$

2.2.1 Times ten minus thirty

2.2.2 $10n - 30$

2.2.3 $T_n = 10(20) - 30 = 200 - 30 = 170$

2.3.1 $T_n = 3n - 20$

2.3.2 $T_{25} = 3(25) - 20 = 75 - 20 = 55$

2.3.3 25^{th}

2.3.4 $3n - 20 = 90$

$$3n = 110$$

$$n = \frac{110}{3}$$

$$= 36 \frac{2}{3} \text{ It does NOT belong}$$

CONSOLIDATION AND EXTENSION

1. a) $-4 ; -3 ; -2 ; -1 ; 0 ; 1$
b) $+5 ; +6 ; +7 ; +8 ; +9 ; +10$
c) $+4 ; +3 ; +2 ; +1 ; 0 ; -1$
d) $+5 ; +2 ; -1 ; -4 ; -7 ; -10$

2. a) Constant difference
b) Constant difference
c) Constant ratio
d) Constant ratio

3. $T_n = -4n - 1$
 $T_0 = -4(10) - 1$
 $= -40 - 1$
 $= -41$

19 Functions & Relationships

Exercise 1

- 1.1 100; 50; 0; **-50**; **-100**; **-150**
 1.2 **-5**; **-10**; **-15**; **-20**; **-25**; **-30**
 1.3 **-13**; **-11**; **-9**; **-7**; **-5**; **-3**
 1.4 **-200**; **-175**; **-150**; **-125**; **-100**; **-75**

2.

x	0	1	2	3	4
y	-11	-9	-7	-5	-3

$$y = 0 - 11 = -11$$

$$y = 2 - 11 = -9$$

$$y = 4 - 11 = -7$$

$$y = 6 - 11 = -5$$

$$y = 8 - 11 = -3$$

3.1

x	1	2	3	4	5
y	-2	1	4	7	10

$$y = 3(1) - 5 = 3 - 5 = -2$$

$$y = 3(2) - 5 = 6 - 5 = 1$$

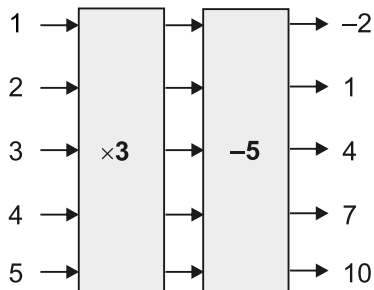
$$y = 3(3) - 5 = 9 - 5 = 4$$

$$y = 3(4) - 5 = 12 - 5 = 7$$

$$y = 3(5) - 5 = 15 - 5 = 10$$

3.2 $T_n = 3n - 5$

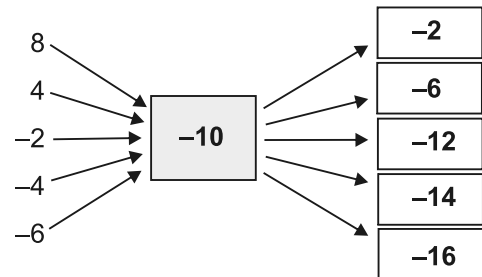
3.3



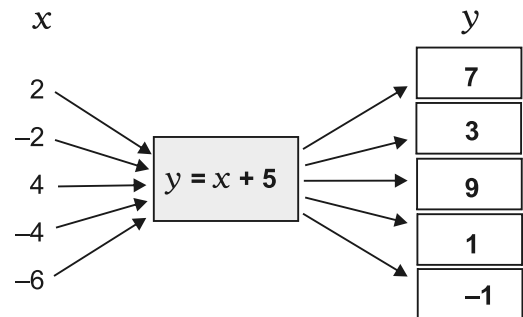
3.4 **-2**; **1**; **4**; **7**; **10**

CONSOLIDATION AND EXTENSION

1.1



2.1



3.

x	1	2	3	4	5	10
y	6	8	10	12	14	24

$$y = 2(1) + 4 = 2 + 4 = 6$$

$$y = 2(2) + 4 = 4 + 4 = 8$$

$$y = 2(3) + 4 = 6 + 4 = 10$$

$$y = 2(4) + 4 = 8 + 4 = 12$$

$$y = 2(5) + 4 = 10 + 4 = 14$$

$$y = 2(10) + 4 = 20 + 4 = 24$$

20 Algebraic Expressions

Exercise 1

- 1.1 -1 and 11 1.2 x
- 2.1 When $n = 1$ $3(1) - 1 = 3 - 1 = 2$
 When $n = 2$ $3(2) - 1 = 6 - 1 = 5$
 When $n = 3$ $3(3) - 1 = 9 - 1 = 8$
- 2.2 $T_{25} = 3(25) - 1 = 75 - 1 = 74$
3. $T_n = 4n - 3$
- 4.1 2 and 72
- 4.2 x
- 4.3 When $n = 1$ $T_n = 7(1) + 2 = 9$
 When $n = 2$ $T_n = 7(2) + 2 = 16$
 When $n = 3$ $T_n = 7(3) + 2 = 23$
- 4.4 $T_n = 7(20) + 2 = 142$

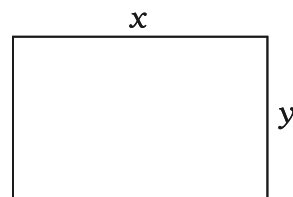
Exercise 2

- 1.1 x
- 1.2 $-25 / -2$
- 1.3 $3x - 2 = -25$
 $3x = -25 + 2$
 $3x = -23$
 $x = \frac{-23}{3} = -7\frac{2}{3}$
- 2.1 $T_n = 5n - 23$
- 2.2 $T_{20} = 5(20) - 23 = 100 - 23 = 77$
- 2.3 $T_{132} = 5(132) - 23 = 660 - 23 = 637$
- 3.1 Elaine's age
- 3.2 $10 + 7 = 17$
- 3.3 $x + 7 = 36$
 $x = 29$

CONSOLIDATION AND EXTENSION

- | | |
|----------------|---------------------------------|
| 1.1 $x + (-3)$ | 1.3 $-6x$ |
| 1.2 $x - (-2)$ | 1.4 $\frac{x}{8}$ or $x \div 8$ |
- 2.1 $(-2) + 3 = 1$
- 2.2 $(-2) - (3) = -5$
- 2.3 $(-2) \times (3) = -6$
- 2.4 $\frac{-2}{3}$
- 2.5 $2(-2) = -4$
- 2.6 $(-2) + (3 \times 3) - 2 + 9 = 7$

3.



$$x + x + y + y$$

$$\text{or } 2x + 2y$$

$$\text{or } 2(x + y)$$

21 Algebraic Equations

Exercise 1

1.1 $5x - 4x = -6$
 $x = -6$

1.2 $2x - 5 = 11$
 $2x = 16$
 $x = 8$

1.3 $x - 10 = -12$
 $x = -12 + 10$
 $x = -2$

1.4 $x + x + 1 + x + 2 = -24$
 $3x + 3 = -24$
 $3x = -27$
 $x = -9$
The numbers are:
 $-9; -8; -7$

1.5 $3x + x = 64$
 $4x = 64$
 $4x = \frac{64}{4}$
 $x = 16$

Exercise 2

1.1 $1\ 000 - 20n$

1.2 $-20x = 400 - 1\ 000$
 $-20x = -600$
 $x = \frac{600}{20}$
 $= 30$

1.3 $\frac{1\ 000}{20} = 50$ years

2.1 $R20\ 000 - 20\%(n)$ of R200

2.2 $100\% \div 20\% = 5$ years

Exercise 3

1.1 10

1.2 5

1.3 $\frac{-5}{4}$

1.4 -2

1.5 $x = -12$

2.1 -4

2.2 -1

3. $y = 3(-4) - 1$
 $y = -12 - 1$
 $y = -13$

4. $m = 2(-3) - 1$
 $n = -6 - 1$
 $n = -7$

CONSOLIDATION AND EXTENSION

1.1 $x = -1 + 7 = x = 6$

1.2 $y = -7$

1.3 $x = 1$

1.4 $x = -7$

1.5 $x = 4$

1.6 $x = 3$

1.7 $x = -8$

1.8 $x = -12$

2.1 $y = -2 + 3 = 1$

2.2 $y = -2 - 2 = -4$

2.3 $y = (-2) + 2 = -6 + 2 = -4$

2.4 $y = (-2)^2 + 3 = 4 + 3 = 7$

2.5 $y = [(-2) + 3] \times 5 = 1 \times 5 = 5$

2.6 $y = [4 \times (-2)] + 2 = -8 + 2 = -6$

22 Data Handling

Exercise 1

- 1.1 The learners/residents of Marian High School.
- 1.2 The owners/residents of Port Elizabeth.
- 1.3 Newspaper, radio, internet, tv
- 2.1 Sample
- 2.2 Population

3.

	Type of item to be sold	Tick (✓) 5 of your favourite
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Exercise 2

1.1

Result	Tally	Frequency
Win	I	6
Loss		3
Draw		5

2.1

Stem	Leaf
1	0 0 1 2 2 3 7 8 8 9
2	2 3 4 6 8 9
3	1 3 4
4	5

3.2 40

3.3 79

3.4 67

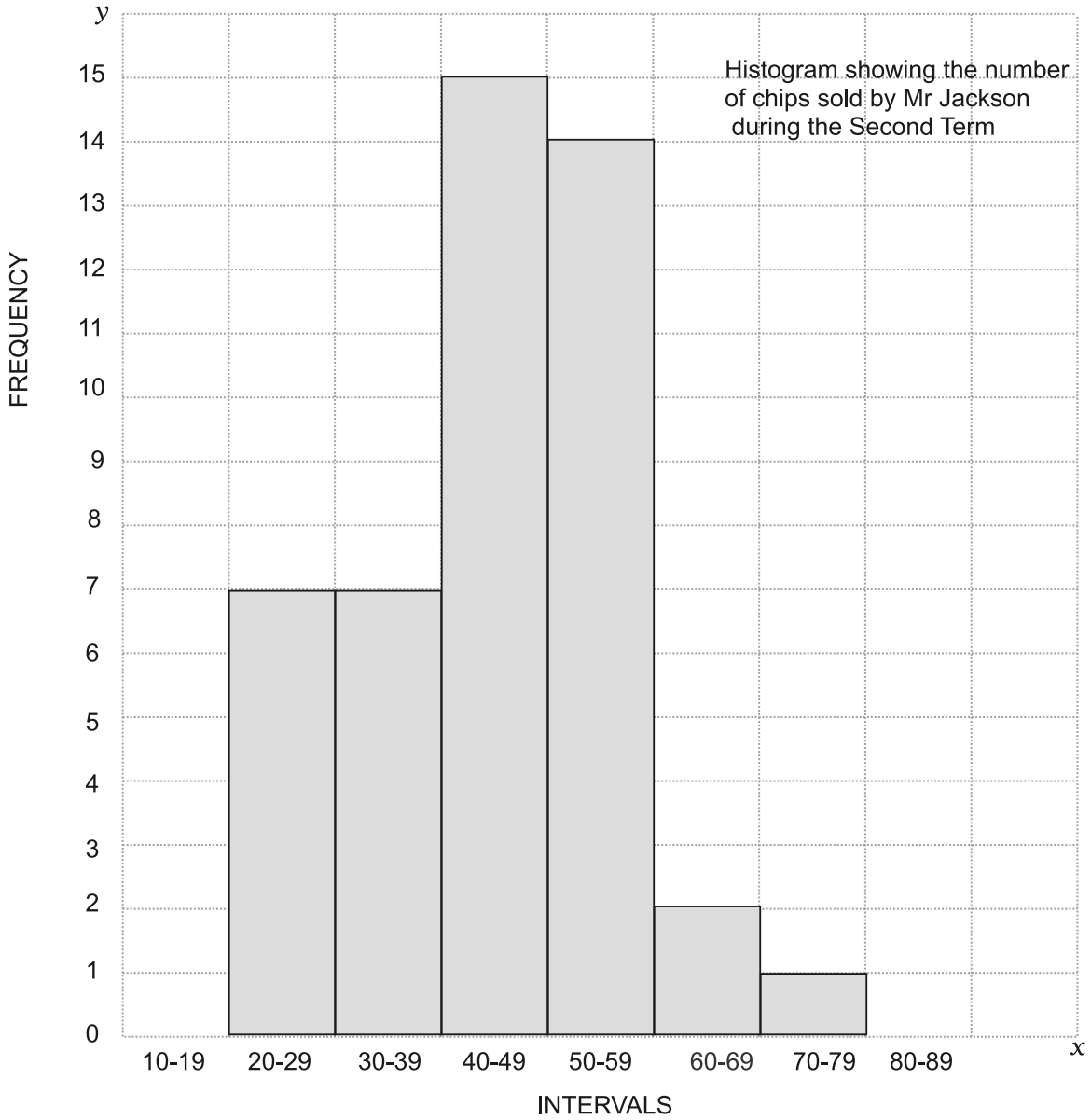
Exercise 3

1.1 20 78

1.2

Interval	Tally	Total
20-29	II	7
30-39	II	7
40-49		15
50-59		14
60-69		2
70-79	I	1

1.3



Exercise 4

1.

Test number	1	2	3	4	5	6
Slindile	38	39	42	23	35	41
Sibiso	42	47	48	31	45	50

1.1 50

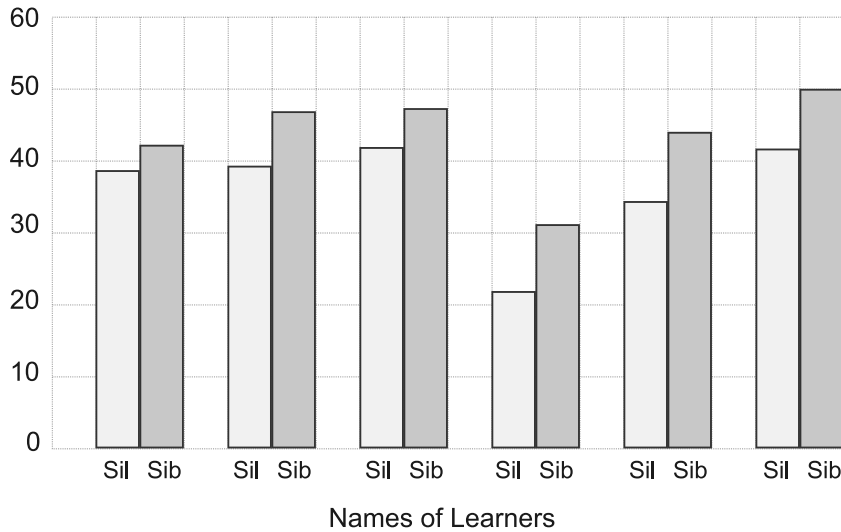
1.2 Test 4: Both learners did poorly

1.3 90%

1.4 46%

1.5

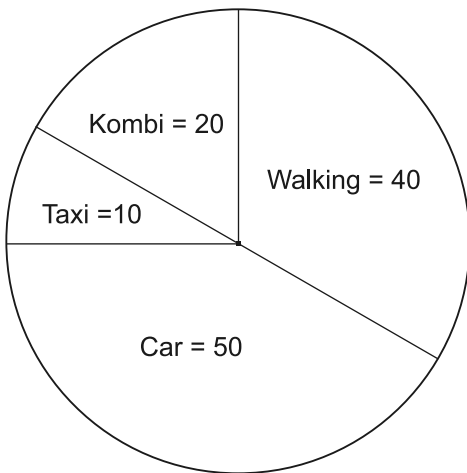
Graph showing the results of six Mathematics tests



Exercise 5

- 1.1 Soccer: **70** Cricket: **20**
 Hockey: **55** Volleyball: **35**

2.1



Exercise 6

- 1.1 100%
 1.2 Yes, 100% represents the total for the test.
 1.3.1 $1795 \div 27 = 66,4 = 66$
 1.3.2 37/48/54/63/72/85/95
 1.3.3 $100 - 29 = 71$
 1.3.4 72

CONSOLIDATION AND EXTENSION

- 1.1 1.2 Soccer 1.3 Swimming

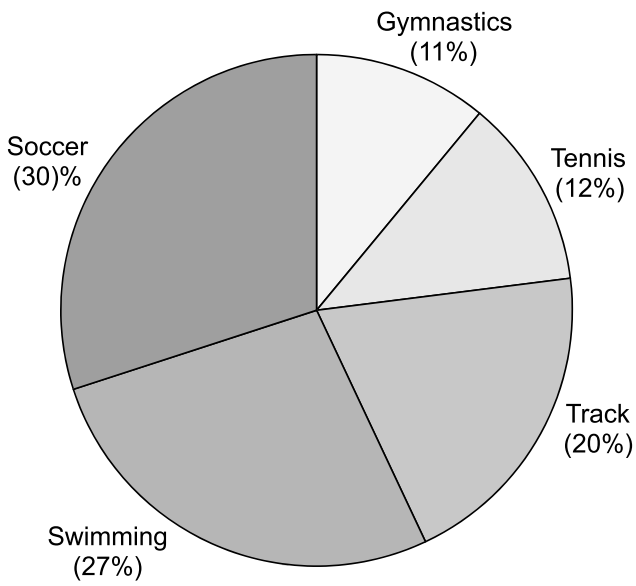
Favourite sport	Tally	Frequency
Soccer	III	8
Swimming		2
Netball		5
Cricket		5
	Total	20

2.1

Stem	Leaf
1	8
2	00 1233 55 6 77777 88 9999
3	0 222 5 66 8 9

- 2.2 39°C 2.3 18°C 2.4 6

3.



3.1 11%

3.2 $30\% \text{ of } 1\,000 = \frac{30}{100} \times \frac{1\,000}{1} = 300$

3.3 Swimming - 27%

Tennis - 12%

Total - 39%

$$= \frac{39}{100} \times \frac{1\,000}{1}$$

$$= 390$$

23 Probability

Exercise 1

- 1.1 2
 1.2 Head or Tail
 1.3 (50%) 1 out of 2 possible outcomes.
 2.1 4
 2.2 HH/HT/TT/TH
 2.3 $\frac{1}{4}$ / 1 out of 4
 2.4 $\frac{3}{4}$ / 3 out of 4

3.1 6

3.2 1/2/3/4/5/6

3.3 a) $\frac{1}{6}$

b) $\frac{1}{3}$

c) $\frac{1}{2}$

d) 0

e) $\frac{1}{3}$

Exercise 2

1.1 $\frac{6}{12}$ or $\frac{1}{2}$

1.2 $\frac{2}{12}$ or $\frac{1}{6}$

1.3 $\frac{1}{12}$

1.4 $\frac{3}{12}$ or $\frac{1}{4}$

1.5 $\frac{9}{12}$ or $\frac{3}{4}$

2.1 a) 5 2.1 b) 2 2.1 c) 3 2.2 $\frac{3}{10}$

Exercise 3

1.1 8

1.2 HHH/HHT/HTH/THT/THH/TTT/TTH/HTT

1.3 a) $\frac{2}{8}$ or $\frac{1}{4}$ 1.3 b) $\frac{7}{8}$ a) $\frac{4}{8}$ or $\frac{1}{2}$

4.1 $\frac{2}{52}$ or $\frac{1}{26}$

4.5 $\frac{8}{52}$ or $\frac{2}{13}$

4.2 $\frac{26}{52}$ or $\frac{1}{2}$

4.6 $\frac{13}{52}$ or $\frac{1}{4}$

4.3 $\frac{13}{52}$ or $\frac{1}{4}$

4.7 $\frac{2}{52}$ or $\frac{1}{26}$

4.4 $\frac{4}{52} = \frac{1}{13}$

CONSOLIDATION AND EXTENSION

1.

1.1 6

1.2 3

1.3 3

1.4 1, 2, 3, 4, 5 and 6

1.5 3 : 6/1 : 2

1.6 3 : 6/1 : 2

1.7 $\frac{1}{6}$

1.8 a) $\frac{1}{2}$

b) 0,5

c) 50%

2. Probability

$$= \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$$

There are 15 favourable outcomes (15 blue cards)

Total outcome is: (23 + 12 + 15) = 50

The probability is: $\frac{15}{50} = \frac{3}{10}$

Decimal: $\frac{15}{50} \times \frac{2}{2} = \frac{30}{100} = 0,3$

Percentage: $\frac{15}{50} \times \frac{2}{2} = \frac{30}{100} = 30\%$

3.1 $\frac{1}{12}$

3.2 $\frac{1}{6} \times \frac{100}{1} = 16,67\%$

i) $\frac{5}{12}$

ii) $\frac{5}{12} = 0.42$

Annual National Assessment

Mathematics Grade 7

Question 1

- | | |
|-------|--------|
| 1.1 B | 1.6 C |
| 1.2 C | 1.7 B |
| 1.3 C | 1.8 B |
| 1.4 A | 1.9 A |
| 1.5 B | 1.10 D |

Question 2

2.1. a)
$$\begin{array}{r} 1\ 643\ 884 \\ + 262\ 206 \\ \hline 1\ 906\ 090 \end{array}$$

b)
$$\begin{array}{r} 210 \text{ rem } 7 \\ 31 \overline{) 6\ 517} \\ \underline{- 6\ 200} \\ 317 \\ \underline{- 310} \\ 7 \end{array} \quad \begin{array}{l} 200 \times 31 = 6\ 200 \\ 10 \times 31 = 310 \end{array}$$

c)
$$\begin{array}{r} 315 \\ \times 236 \\ \hline 1\ 890 \\ 9\ 450 \\ + 63\ 000 \\ \hline 74\ 340 \end{array} \quad \begin{array}{l} 315 \times 6 = 1\ 890 \\ 315 \times 30 = 9\ 450 \\ 315 \times 200 = 63\ 000 \end{array}$$

d) $2^3 \times 1^3 = 8 \times 1 = 8$

e) $\sqrt{144} + 6^2 = 12 + 36 = 48$

f) $\frac{3^1}{5} \times \frac{7}{6^2}$ or $\frac{3}{5} \times \frac{7}{6}$
 $= \frac{7}{10} \quad = \frac{21}{20} = \frac{7}{10}$

g) $\frac{0,012}{4} = 0,003$

h) $100 - 12 \div (8 + 4)$
 $= 100 - 12 \div 12$
 $= 100 - 1$
 $= 99$
 or $100 - (12 \div 12)$

2.2 $1,6 \frac{16}{10} = \frac{8}{5}$

2.3 $2 + 3 = 5$
 No. of boys = $\frac{2}{5} \times \frac{25}{1} = 10$

OR No. of boy: No. of girls
 Total: 2 : 3 : 5
 \therefore No. of boys = $\frac{2}{5} \times \frac{25}{1} = 10$

2.4 $= \frac{10}{100} \times \frac{R15,00}{1}$
 $= R1,50$

OR
 $\frac{1}{10} \times \frac{R15,00}{1}$
 R1,50

2.4 $80\text{km/h} \times 4,5\ \text{h}$
 $= 360\ \text{km}$ OR
 Distance travelled
 $= 80\ \text{km/h} \times \frac{9}{2}\ \text{h}$
 $= 360\ \text{km}$

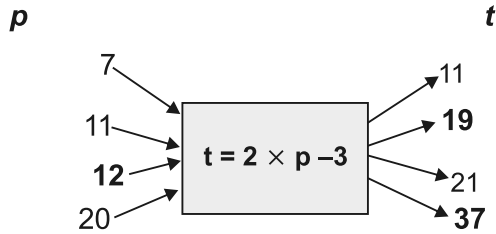
Question 3

- 3.1 a) 1 ; 4 ; 9 ; 16 ; 25 ; 36
 b) Square

3.2

Number of polygons	1	2	3	4	n
Number of sides	8	15	22	29	$7n+1$

3.3



3.4 $c^3 + 12 = (3)^3 + 12$
 $= 27 + 12 = 39$

- 3.5 a) $k = 27$
 b) $y = 30$

- 3.6 a) $x + 5$
 b) $2p - 8 = 12$

- 3.7 a) 50
 b) Tuesday and Wednesday
 c) $50 - 40 = 10$

Question 4

4.1

Equilateral triangle	Right-angled triangle	Obtuse-angled triangle
C	B	D

- 4.1 a) Acute
 b) Obtuse
 c) Right Angle
 d) BD and AC $BD \perp AC$
 BD and DC $BD \perp DC$
 BD and AD $BD \perp AD$
- 4.3 a) PQ is called the **Diameter**
 b) TM is called the **Radius**
 c) PS is called a chord

- 4.4 a) Figure A is a **parallelogram**
 b) Figure B is a **kite**
 c) Figure C is a **heptagon** or **septagon**
 d) Figure D is a **pentagon**

Question 5

- 5.1 a) $QR = PR = 23$ mm
 b) $\hat{P} = \hat{Q} = \hat{R} = 60^\circ$
- 5.2 a) $DF = 4$ cm
 b) $\hat{F} = 40^\circ$

Question 6

- 6.1 a) D
 b) A, B, C
- 6.2 a) Pair 1 = **congruent**
 b) Pair 2 = **similar**

Question 7

- 7.1 $P = 2l + 2b$
 $= 22 \text{ cm} + 10 \text{ cm}$
 $= 32 \text{ cm}$
- 7.2 Surface area $= 6(1)^2$ or 6×1^2
- 7.3 Volume of rectangular prism
 $= l \times b \times h$
 $= 5 \text{ cm} \times 3 \text{ cm} \times 10 \text{ cm}$
 $= 150 \text{ cm}^3$

Question 8

- 8.1 Daughters age
 $= \text{mothers age} \div 2$
 $= 64 \div 2$ years
 $= 32$ years
- 8.2 $5 \times 2 = 10$
 Difference: $5 - 2 = 3$

