Bearsden Academy

S1 – Block 2 Topics

- Multiples, Factors and Primes
- Fractions
- Money

Block 2

Types of Numbers

- Pupils can identify multiples & find the Lowest Common Multiple of 2-4 values
- Pupils can list the Factors of a number and identify the highest common factor of 2-4 number
- Prime Numbers
- Product of Primes (Prime factor trees/ decomposition)
- Square Numbers, Triangular numbers and Fibonacci

Fractions – fraction arithmetic

- Mixed – Improper
- Improper – Mixed
- Equivalent fractions (recap)
- Addition/Subtraction of fractions with same denominator
- Addition/Subtraction of fractions with different denominators
- Extension – Multiplication and Division of Fractions

Money Matters

- Pupils will be able to calculate money problems involving all 4 operations
- Pupils can compare different offers and explain their choices
- Pupils can carry out calculations between different contracts and services and choose the best option
- Pupils can calculate the cost of borrowing money, choosing the best option
- Pupils will learn how to keep track of spending and make best use of money
- Pupils can plan spending by budgeting
- Pupils can use exchange rates
- Contracts/Services- Loans – Hire Purchase

Exercise 1 — Multiples & Lowest Common Multiples (l.c.m.)

1. a Write down all the multiples of **4** between **30** and **50**.
   b Write down all the multiples of **7** between **30** and **65**.

2. a List the first ten multiples of **3** and the first 10 multiples of **4**.
   b List the **common multiples** of 3 and 4.
   c What is the **l.c.m.** of 3 and 4 ?

3. Find the l.c.m. of each of the following pairs of numbers :-

a	2 and 3	**b**	8 and 6	**c**	3 and 7	**d**	5 and 8
e	10 and 12	**f**	3 and 11	**g**	8 and 9	**h**	6 and 9.

4. Find the l.c.m. of :- **a** 2, 3 and 4 **b** 3, 5 and 9 **c** 2, 7 and 9.

5. 3 disco lights are set off at the same time and then flash at different intervals :-
   - the blue light flashes every 5 seconds.
   - the green light flashes every 6 seconds.
   - the red light flashes every 8 seconds.

   After they flash at the start, how long will it be until they flash together again ?

Exercise 2 — Factors & Highest Common Factor (h.c.f.)

1. Find all the factors of :-

a	10	**b**	18	**c**	23
d	24	**e**	72	**f**	100.

2. a List **all** the factors of 18 and all the factors of 24.
   b Make a list of the common factors of 18 and 24. (those that appear in both lists).
   c What is the **highest common factor** (or **h.c.f.**) of 18 and 24.

3. Find the highest common factor (h.c.f.) for each of the following :-

a	12 and 15	**b**	28 and 35	**c**	24 and 96
d	37 and 41	**e**	100 and 105	**f**	199 and 200.

4. Find the h.c.f. of :- **a** 12, 15, 21 **b** 24, 36, 40.

5. Write down all the factors of 360.

Exercise 3 Prime Numbers

1. a Write all the factors of 15. Why is 15 **not** a prime number ?
   b Explain why the number **1** is **not** a prime number.
   c Explain why 13 **is** a prime number.

2. State whether each number below is a **prime** number or not. (Write **yes** or **no**) :-

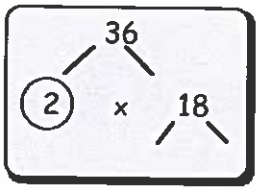
a 5	**b** 16	**c** 15	**d** 17
e 23	**f** 27	**g** 29	**h** 35
i 44	**j** 47	**k** 51	**l** 62.

3. How many **even** numbers are **prime** ?

4. Write down all the prime numbers between 50 and 60.

Exercise 4 Prime Decomposition

1. Copy and complete the prime factor tree shown.



36 = 2 × ... × ...

2. Use a similar method to find the prime decomposition of the following numbers :-

a 12	**b** 50	**c** 27	**d** 80
e 56	**f** 88	**g** 35	**h** 110
i 155	**j** 345	**k** 1000	**l** 256.

Revisit - Review - Revise 3

1. Write down the **lowest common multiple** (l.c.m.) of :-

a 4 and 9	**b** 12 and 20	**c** 11 and 37	**d** 3, 5 and 6.

2. Write down the **highest common factor** (h.c.f.) of :-

a 20 and 28	**b** 110 and 85	**c** 21, 49 and 84.

3. How many **factors** does a **prime** number have ?

4. Write down **all** the **prime** numbers between :-

   a 10 and 20 **b** 40 and 50 **c** 90 and 110.

5. Write down why each of these numbers are definitely **not prime** numbers :-

   a 111114 **b** six million **c** 77777.

6. Write down the **highest common factor** (h.c.f.) of :-

   a 10 and 15 **b** 24 and 26 **c** 15 and 75 **d** 12, 28 and 48.

7. Write each of the following numbers as a **product** of its **prime factors** :-
   (*For example, 18 = 2 x 3 x 3 and 50 = 2 x 5 x 5*).

   a 20 **b** 72 **c** 125 **d** 1200.

Cumulative Ex 1

1. Find the **area** of a square with side :-

   a 9 mm **b** 11 cm **c** 1·5 m.

2. Find :-

   a 3^2 **b** 8^2 **c** 6^2

   d 12^2 **e** 100^2 **f** 2^3

   g 3^4 **h** 10^5 **i** 2^8

   j $(-1)^{21}$ **k** $\sqrt{64}$ **l** $\sqrt{100}$

   m $\sqrt{1}$ **n** $\sqrt{1000000}$ **o** $\sqrt[3]{1000}$

   p $\sqrt[3]{8}$ **q** $\sqrt[3]{27}$.

3. Bingo dog food comes in 2 sizes.

   - the small 350 g tin costs £1·40
   - the 1 kg tin costs £4·60.

   a How much does it cost per 50 g for each size ?

   b Which is better value ? Explain.

4. 

   Which is the best liquid soap buy here :-
   The 100 ml bottle, the 250 ml or the 550 ml bottle ?
   Explain.

Ch 2 Ex 4 Best Deal - Rates or Contracts

1. a £Rate. He will get more £'s b £80
2. a Glesca. Higher rate of interest b £15
3. a £55·40 b 323
   c 8G - £122·40, Mob4 - £126
   Cheapest is Vgen - £118·20.
   d various

Ch 2 Ex 5 Credit & Debit Cards

1. Various
2. a Annual Percentage Rate
   b AMIX, lower payments
   c AMIX 2·5%, Benex 3·0%
   d AMIX - £360 per annum, Benex - £432 per annum
3. £185·00
4. £7414 per year = £617·83 per month

Ch 2 Revisit - Review - Revise 2

1. a small 44p, large 53·6p
   b small is cheaper per 100 ml
2. All 21p per lemon
3. a 439·20 b $5808
   c 3589·74 d 1 euro = 6·8 Krone
4. a £587
   b Not enough cash but still buy the item.
   Cost you more in the long term.
5. a VanHire £72·50 is cheaper. Vans-for-hire £101·25
   b VanHire £101 is cheaper. Vans-for-hire £162

Chapter 3 : Multiples & Factors

Review 2 Rounding & Whole Numbers

1. a 7·7 b 17·7
   c 119·1 d 1544·0
2. (i) a 7·65 b 17·65
   c 119·08 d 1544·00
   (ii) a 8 b 20
   c 100 d 2000
   (iii) a 7·7 b 18
   c 120 d 1500
   (iv) a 7·65 b 17·7
   c 119 d 1540
3. 25499
4. a 1290 b 60800 c 3256000
   d 170 e 50 f 92
   g 4 h 38 i 20·5
5. 2016, 2020
6. £409·08
7. a 61 b 250 ml
8. £3·90

Ch 3 Ex 1 Multiples & l.c.m.

1. a 32, 36, 40, 44, 48
   b 35, 42, 49, 56, 63
2. a 3, 6, 9, 12, 15, 18, 21, 24, 27, 30
   4, 8, 12, 16, 20, 24, 28, 32, 36, 40
   b 12, 24, 36, ...
   c 12
3. a 6 b 24 c 21
   d 40 e 60 f 33
   g 72 h 18
4. a 12 b 45 c 126
5. 120 seconds

Ch 3 Ex 2 Factors & h.c.f.

1. a 1, 2, 5, 10 b 1, 2, 3, 6, 9, 18 c 1, 23
   d 1, 2, 3, 4, 6, 8, 12, 24
   e 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72
   f 1, 2, 4, 5, 10, 20, 25, 50, 100
2. a (i) 1, 2, 3, 6, 9, 18 (ii) see 1d
   b 1, 2, 3, 6 c 6
3. a 3 b 7 c 24
   d 1 e 5 f 1
4. a 3 b 4
5. 1, 2, 3, 4, 6, 8, 9, 10, 12, 15, 18, 20, 24, 30, 40, 45, 60, 90, 120, 180, 360

Ch 3 Ex 3 Prime Numbers

1. a 1, 3, 5, 15 More than 2 factors
   b only 1 factor
   c has exactly 2 factors
2. a yes b no c no
   d yes e yes f no
   g yes h no i no
   j yes k no l no
3. only one (the number 2)
4. 53, 59

Ch 3 Ex 4 Prime Decomposition

1. a $2 \times 2 \times 3 \times 3$
2. a $2 \times 2 \times 3$ b $2 \times 5 \times 5$ c $3 \times 3 \times 3$
   d $2 \times 2 \times 2 \times 2 \times 5$
   e $2 \times 2 \times 2 \times 7$
   f $2 \times 2 \times 2 \times 11$
   g 5×7 h $2 \times 5 \times 11$ i 5×31
   j $3 \times 5 \times 23$ k $2 \times 2 \times 2 \times 5 \times 5$
   l $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

Ch 3 Revisit - Review - Revise 3

1. a 36 b 60
   c 407 d 30
2. a 4 b 5 c 7
3. 2
4. a 11, 13, 17, 19 b 41, 43, 47 c 97
5. a even b even c divide by 7
6. a 5 b 2
   c 15 d 4
7. a $2 \times 2 \times 5$ b $2 \times 2 \times 2 \times 3 \times 3$
   c $5 \times 5 \times 5$ d $2 \times 2 \times 2 \times 2 \times 3 \times 5 \times 5$

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   b 35, 42, 49, 56, 63
2. a 3, 6, 9, 12, 15, 18, 21, 24, 27, 30
   4, 8, 12, 16, 20, 24, 28, 32, 36, 40
   b 12, 24, 36, ...
   c 12
3. a 6 b 24 c 21
   d 40 e 60 f 33
   g 72 h 18
4. a 12 b 45 c 126
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Ch 3 Ex 2 Factors & h.c.f.

1. a 1, 2, 5, 10 b 1, 2, 3, 6, 9, 18 c 1, 23
   d 1, 2, 3, 4, 6, 8, 12, 24
   e 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72
   f 1, 2, 4, 5, 10, 20, 25, 50, 100
2. a (i) 1, 2, 3, 6, 9, 18 (ii) see 1d
   b 1, 2, 3, 6 c 6
3. a 3 b 7 c 24
   d 1 e 5 f 1
4. a 3 b 4
5. 1, 2, 3, 4, 6, 8, 9, 10, 12, 15, 18, 20, 24, 30, 40, 45, 60, 90, 120, 180, 360

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   e $2 \times 2 \times 2 \times 7$
   f $2 \times 2 \times 2 \times 11$
   g 5×7 h $2 \times 5 \times 11$ i 5×31
   j $3 \times 5 \times 23$ k $2 \times 2 \times 2 \times 5 \times 5$
   l $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

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1. a 36 b 60
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2. a 4 b 5 c 7
3. 2
4. a 11, 13, 17, 19 b 41, 43, 47 c 97
5. a even b even c divide by 7
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   c 15 d 4
7. a $2 \times 2 \times 5$ b $2 \times 2 \times 2 \times 3 \times 3$
   c $5 \times 5 \times 5$ d $2 \times 2 \times 2 \times 2 \times 3 \times 5 \times 5$

Chapter 31

Calculators may be used in this chapter but the FRACTION BUTTON should **NOT** be used.

Fractions

Exercise 1

1. Change each of these top heavy fractions to mixed numbers :-

(a) $\frac{15}{2}$ (b) $\frac{16}{3}$ (c) $\frac{42}{5}$ (d) $\frac{91}{20}$

(e) $\frac{25}{4}$ (f) $\frac{63}{8}$ (g) $\frac{122}{11}$ (h) $\frac{629}{25}$

2. Change each of the following to a mixed number and simplify where possible :-

(a) $\frac{30}{4}$ (b) $\frac{25}{10}$ (c) $\frac{131}{5}$ (d) $\frac{100}{15}$

(e) $\frac{305}{25}$ (f) $\frac{78}{8}$ (g) $\frac{1005}{25}$ (h) $\frac{100005}{100}$

3. Change each of the following mixed numbers to a top heavy fraction :-

(a) $3\frac{1}{2}$ (b) $4\frac{1}{3}$ (c) $7\frac{3}{5}$ (d) $10\frac{5}{6}$

(e) $7\frac{8}{9}$ (f) $5\frac{11}{12}$ (g) $10\frac{1}{50}$ (h) $15\frac{8}{15}$

4. How many $\frac{1}{4}$ litre glasses of juice can I get from :-

(a) 2 litres (b) 10 litres (c) $\frac{1}{2}$ litre (d) $3\frac{3}{4}$ litres ?

Exercise 2

1. Copy each of the following and simplify (where possible) :-

(a) $\frac{1}{5}+\frac{3}{5}$ (b) $\frac{2}{7}+\frac{1}{7}$ (c) $\frac{5}{8}-\frac{2}{8}$ (d) $\frac{8}{11}-\frac{5}{11}$

(e) $\frac{4}{5}-\frac{3}{5}$ (f) $\frac{7}{8}-\frac{5}{8}$ (g) $\frac{1}{8}+\frac{3}{8}$ (h) $\frac{4}{10}+\frac{6}{10}$

2. Copy each and simplify :-

(a) $4\frac{1}{2}+2\frac{1}{2}$ (b) $6\frac{1}{4}+1\frac{1}{4}$ (c) $4\frac{3}{4}+2\frac{3}{4}$ (d) $5\frac{7}{8}+\frac{5}{8}$

(e) $2\frac{3}{4}-2\frac{1}{4}$ (f) $7\frac{5}{8}-4\frac{3}{8}$ (g) $10\frac{7}{10}-5\frac{3}{10}$ (h) $2\frac{13}{15}-1\frac{8}{15}$

3. Tom walked for $\frac{3}{8}$ of a kilometre, rested, and then walked another $\frac{1}{8}$ kilometres. How far had Tom walked in total ?

4. Jerry mixed $2\frac{3}{4}$ kg's of currants and $1\frac{1}{4}$ kg's of raisins into a bowl.
What is the total weight of currants and raisins ?

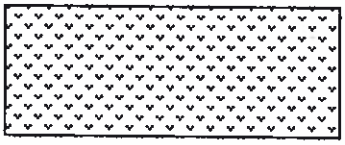
5. 

Bill jogged $5\frac{3}{4}$ km of an eight kilometre run.
How far has Bill still to jog ?

6. At a birthday party, Ann drank $1\frac{1}{4}$ litres of punch,
Alec drank $2\frac{1}{4}$ litres and Jim drank $\frac{3}{4}$ of a litre.

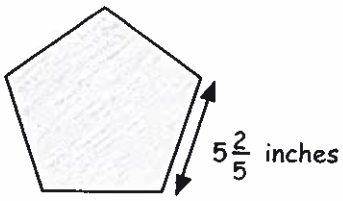
(a) How much punch did they drink altogether.

(b) How much punch was left from a 6 litre bowl ?

7. 

A rectangular garden measures $7\frac{3}{5}$ metres by $4\frac{4}{5}$ metres.
Find the perimeter of the garden.

8. An regular pentagonal garden slab has side $5\frac{2}{5}$ inches.
Find the perimeter of the slab.



Exercise 3

1. **Copy** and complete each of the following calculations and simplify where possible :-
(Remember - denominators must be the same to add or subtract)

(a) $\frac{1}{2} + \frac{1}{8}$ (b) $\frac{2}{3} + \frac{1}{6}$ (c) $\frac{3}{4} - \frac{5}{12}$ (d) $\frac{5}{16} - \frac{1}{4}$

(e) $\frac{7}{10} + \frac{3}{5}$ (f) $\frac{5}{6} - \frac{7}{12}$ (g) $\frac{9}{16} + \frac{3}{4}$ (h) $\frac{9}{51} - \frac{3}{17}$

(i) $\frac{2}{3} + \frac{1}{2} + \frac{1}{4}$ (j) $\frac{5}{12} + \frac{1}{4} - \frac{1}{2}$ (k) $\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5}$

2. **Copy** and simplify :-

(a) $3\frac{1}{2} + 1\frac{1}{3}$ (b) $1\frac{1}{3} + 3\frac{1}{4}$ (c) $4\frac{1}{2} + 1\frac{2}{5}$ (d) $4\frac{1}{2} - 1\frac{2}{5}$

(e) $6\frac{7}{8} - 4\frac{3}{4}$ (f) $1\frac{3}{5} - \frac{7}{15}$ (g) $4\frac{9}{10} - 3\frac{3}{4}$ (h) $4\frac{9}{10} + 3\frac{3}{4}$

3. **Copy** and simplify :-

(a) $5 - 2\frac{2}{3}$ (b) $8 - 4\frac{4}{7}$ (c) $4\frac{1}{2} - 2\frac{3}{4}$ (d) $7\frac{3}{8} - 1\frac{1}{2}$

(e) $3\frac{1}{6} - 1\frac{4}{5}$ (f) $11\frac{1}{3} - 9\frac{1}{2}$ (g) $8\frac{2}{5} - 1\frac{2}{3}$ (h) $1\frac{1}{4} - \frac{2}{5}$

Exercise 4

1. Copy and complete each calculation (simplifying where possible) :-

(a) $\frac{2}{3} \times \frac{5}{7}$ (b) $\frac{1}{2} \times \frac{3}{5}$ (c) $\frac{3}{4} \times \frac{7}{8}$ (d) $\frac{5}{8} \times \frac{2}{3}$

(e) $\frac{7}{8} \times \frac{1}{14}$ (f) $\frac{2}{3} \times \frac{15}{16}$ (g) $\frac{7}{10} \times \frac{5}{14}$ (h) $\frac{5}{4} \times \frac{8}{15}$

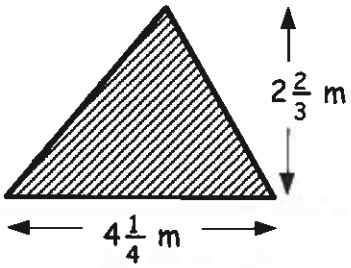
2. Simplify :-

(a) $2\frac{1}{4} \times 3\frac{1}{2}$ (b) $4\frac{2}{3} \times 3\frac{1}{2}$ (c) $2\frac{3}{4} \times 3\frac{1}{2}$ (d) $1\frac{2}{5} \times 2\frac{3}{5}$

(e) $5\frac{4}{5} \times 1\frac{2}{3}$ (f) $1\frac{1}{7} \times 2\frac{4}{5}$ (g) $1\frac{4}{9} \times 4\frac{1}{2}$ (h) $5\frac{3}{5} \times \frac{6}{7}$

3. A large rectangular metal sheet has dimensions $2\frac{2}{5}$ metres by $3\frac{3}{4}$ metres.
Calculate the area of the metal sheet.

4. A triangle has dimensions as shown.
Calculate the area of the triangle.



Exercise 5

1. Copy and complete each calculation (simplifying where possible) :-

(a) $\frac{3}{5} \div \frac{3}{4}$ (b) $\frac{4}{5} \div \frac{2}{15}$ (c) $\frac{1}{8} \div \frac{1}{4}$ (d) $\frac{4}{9} \div \frac{4}{15}$

(e) $\frac{7}{11} \div \frac{7}{22}$ (f) $\frac{8}{15} \div \frac{2}{3}$ (g) $\frac{11}{36} \div \frac{22}{24}$ (h) $\frac{10}{33} \div \frac{25}{36}$

2. Copy and complete :-

(a) $6\frac{2}{3} \div 2\frac{1}{2}$ (b) $4\frac{1}{5} \div 3\frac{1}{2}$ (c) $1\frac{5}{7} \div 1\frac{1}{5}$ (d) $1\frac{2}{3} \div 2\frac{2}{9}$

(e) $4\frac{4}{5} \div 1\frac{1}{15}$ (f) $1\frac{1}{2} \div 1\frac{3}{7}$ (g) $5\frac{2}{5} \div 6\frac{2}{5}$ (h) $2\frac{5}{8} \div 1\frac{2}{5}$

3. A sack of potatoes weighs $12\frac{5}{8}$ kg.
The sack has to be emptied into bags each weighing $2\frac{1}{4}$ kg.
(a) How many full bags can be filled from the sack ?
(b) What weight of potatoes is left ?

4. A twenty metre length of rope is cut into $1\frac{5}{8}$ metre pieces.
How much of the rope would be left over ?

Revision Exercise

1. Change to a mixed number :- (a) $\frac{22}{7}$ (b) $\frac{83}{3}$

2. Change to a top heavy fraction :- (a) $4\frac{1}{4}$ (b) $10\frac{2}{9}$

3. Copy and complete :-

   (a) $\frac{2}{5} + \frac{1}{5}$ (b) $\frac{4}{5} + \frac{2}{3}$ (c) $\frac{8}{9} - \frac{2}{3}$ (d) $\frac{4}{5} - \frac{3}{8}$

   (e) $2\frac{4}{5} + 3\frac{3}{4}$ (f) $1\frac{1}{7} + \frac{3}{5}$ (g) $5\frac{2}{3} - 3\frac{3}{5}$ (h) $5\frac{1}{3} - 2\frac{3}{4}$

4. Copy and complete :-

   (a) $\frac{4}{9} \times \frac{7}{8}$ (b) $\frac{2}{3} \times \frac{9}{16}$ (c) $2\frac{1}{3} \times 1\frac{1}{5}$ (d) $5\frac{5}{6} \times 1\frac{3}{7}$

   (e) $\frac{5}{6} \div \frac{2}{3}$ (f) $\frac{7}{9} \div \frac{2}{3}$ (g) $\frac{15}{7} \div \frac{5}{14}$ (h) $3\frac{5}{9} \div 2\frac{2}{3}$

5. A rectangle has length $4\frac{2}{3}$ metres and breadth $2\frac{1}{4}$ metres.
   Calculate the area of the rectangle.

6. A rectangle has an area of $8\frac{3}{4}$ metres.
   If the rectangle has length $5\frac{5}{6}$ metres, find the breadth.

Chapter 59

Calculators should **not** be used anywhere in this Chapter unless you are otherwise instructed.

Pythagoras

Exercise 1

1. Find :-

(a) 3^2 (b) 5^2 (c) 2^2 (d) 1^2 (e) 10^2

(f) 9^2 (g) 11^2 (h) 12^2 (i) 20^2 (j) 100^2

(k) $(\frac{1}{2})^2$ (l) $(\frac{1}{3})^2$ (m) $(\frac{1}{5})^2$ (n) $(0{\cdot}1)^2$ (o) $(0{\cdot}01)^2$.

2. Calculate the area of a square with side :-

(a) 5 cm (b) 10 cm (c) 7 mm (d) 0·5 m (e) 1 km.

Exercise 2

1. Find :-

(a) $\sqrt{36}$ (b) $\sqrt{25}$ (c) $\sqrt{100}$ (d) $\sqrt{169}$ (e) $\sqrt{4}$

(f) $\sqrt{225}$ (g) $\sqrt{10000}$ (h) $\sqrt{900}$ (i) $\sqrt{1600}$ (j) $\sqrt{1}$.

2. Use a calculator and write down to two decimal places :-

(a) $\sqrt{20}$ (b) $\sqrt{50}$ (c) $\sqrt{56}$ (d) $\sqrt{179}$ (e) $\sqrt{14{\cdot}4}$.

3. Calculate the length of the side of a square with area :-

(a) 49 cm^2 (b) 81 cm^2 (c) 9 m^2 (d) 1 mm^2 (e) 0·25 m^2.

Exercise 3 & 4

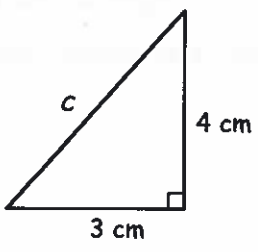
1. Use **Pythagoras' Rule** to calculate the length of the hypotenuse in this triangle :-

$\Rightarrow \quad c^2 = a^2 + b^2$

$\Rightarrow \quad c^2 = 3^2 + \ldots.$

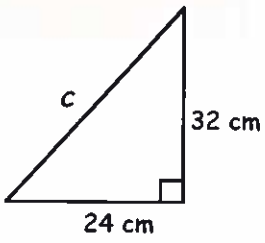
$\Rightarrow \quad c^2 = 9 + \ldots. = \ldots.$

$\Rightarrow \quad c = \sqrt{\ldots.} = \ldots.$ cm

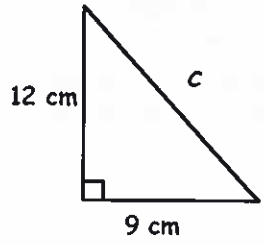


2. For each right angled triangle shown, use **Pythagoras' Theorem** to calculate the length of each hypotenuse :-

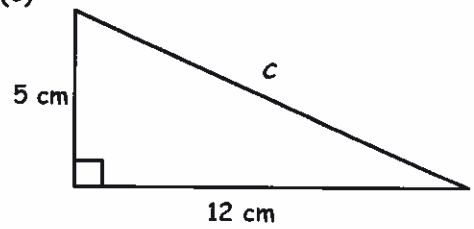
(a)



(b)

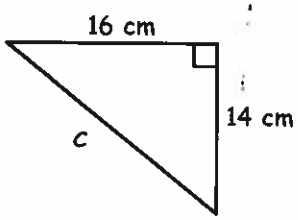


(c)

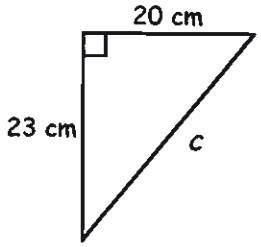


3. For each right angled triangle shown, use **Pythagoras' Theorem** to calculate the length of each hypotenuse (correct to two decimal places) :-

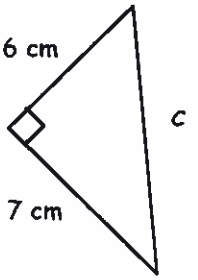
(a)



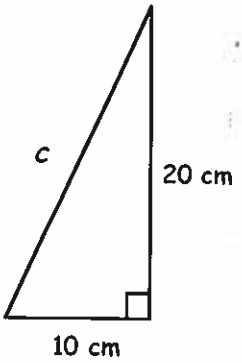
(b)



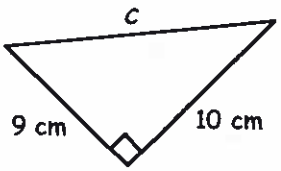
(c)



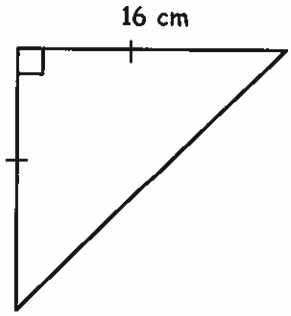
(d)



(e)



(f)



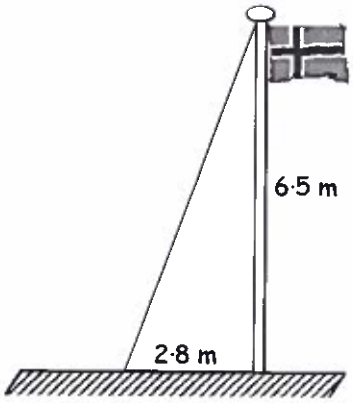
Exercise 5

(In this exercise, round all answers to two decimal places where necessary).

1. A metal wire is attached to the top of a flagpole to help keep it rigid.

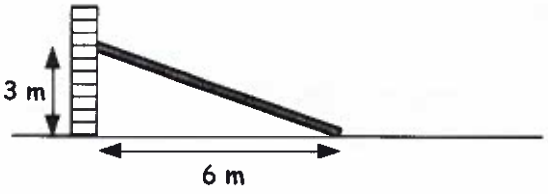
   Calculate the length of the metal wire.

   (Hint : Use **Pythagoras Theorem**).



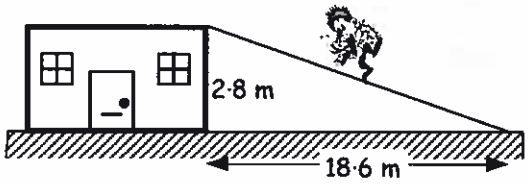
2. A long wooden beam is required to prop up a wall which is deemed unsafe.

   How long is the required beam ?



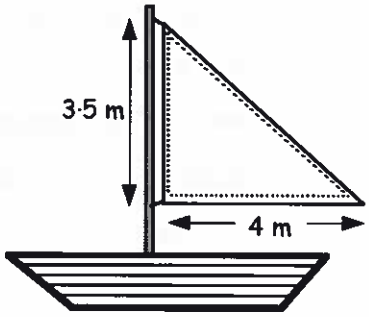
3. A tightrope walker is to walk from a roof-top to the ground along a rope.

   Calculate the length of the rope.



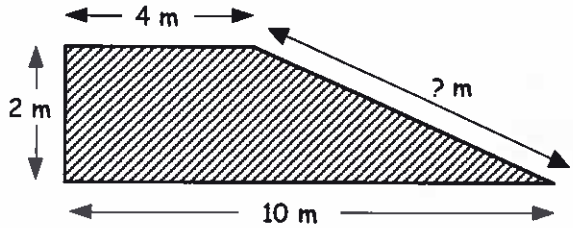
4. A coloured strip is to be stitched around the outside of the sail of a yacht.

   Find the total length of strip needed.



5. A skateboard ramp has dimensions as shown.

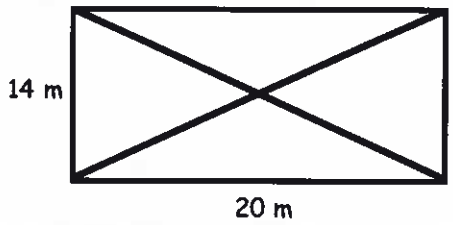
   Calculate the length of the sloping side of the ramp.



6. Lines are to be painted in the shape of a large rectangle with its diagonals included.

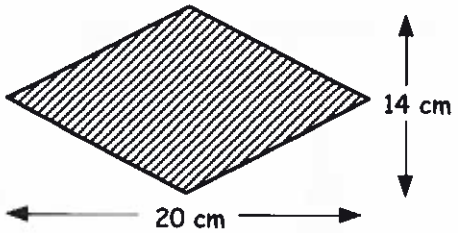
   (a) Calculate the length of one diagonal ?

   (b) What is the total length of the lines requiring to be painted ?



7. A rhombus has its diagonal lengths 20 centimetres and 14 centimetres.

   Calculate the perimeter of the rhombus.



8. A ship sets out from Port and sails 20 kilometres due West then 15 kilometres due North.

   The ship develops engine trouble and must return directly to Port.

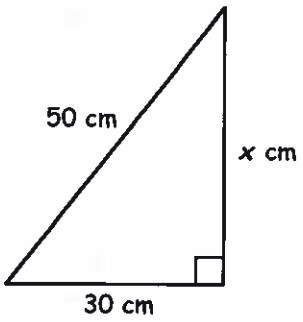
   How far will the ship have to sail to go directly back to Port ?

(A sketch will help you !)

Exercise 6

1. **COPY** and complete the calculation to find the length side marked x.

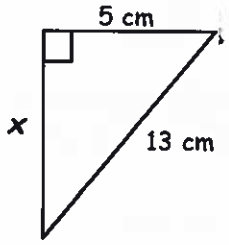
$$a^2 = c^2 - b^2$$
$$\Rightarrow x^2 = 50^2 - 30^2$$
$$\Rightarrow x^2 = 2500 - 900$$
$$\Rightarrow x^2 = 1600$$
$$\Rightarrow x = \ldots. \text{ cm}$$



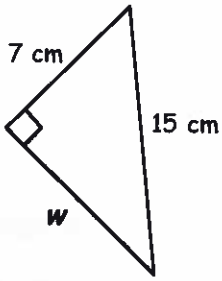
2. In each of the following right angled triangles, calculate the size of each unknown smaller side :-

(Give your answer to two decimal places where necessary).

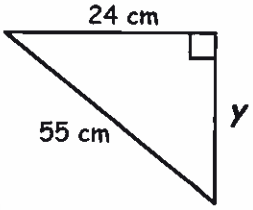
(a)



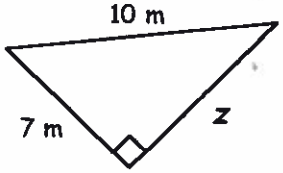
(b)



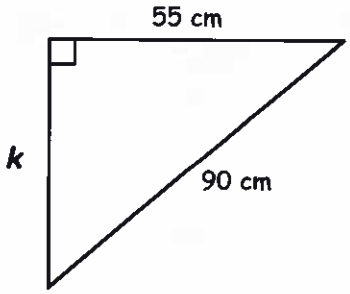
(c)



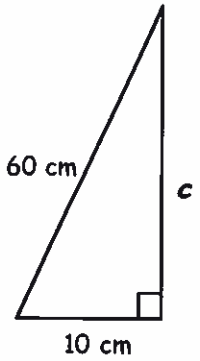
(d)



(e)

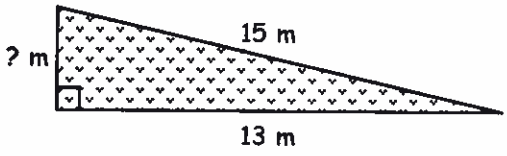


(f)

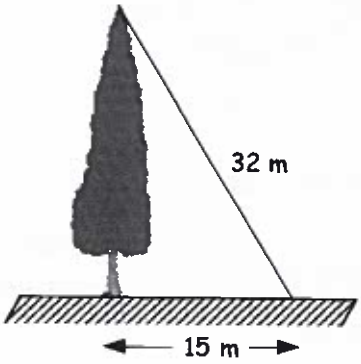


3. A triangular garden has dimensions as shown.

Find the breadth of the garden.



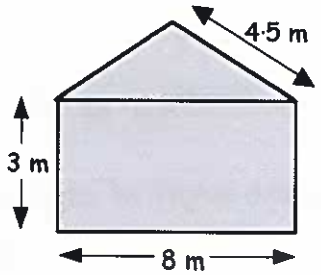
4.



Calculate the height of the tree.

5. A house has dimensions as shown where the roof is in the shape of an isosceles triangle.

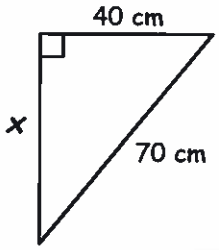
   Find the total height of the house.



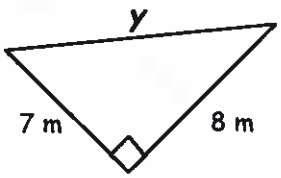
Exercise 7

1. For each question below, use an appropriate formula to find the values of x, y and z :-

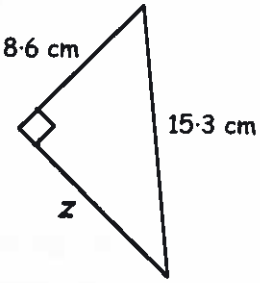
(a)



(b)



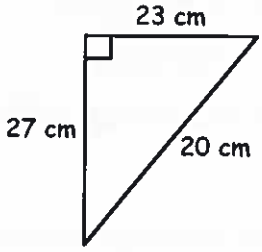
(c)



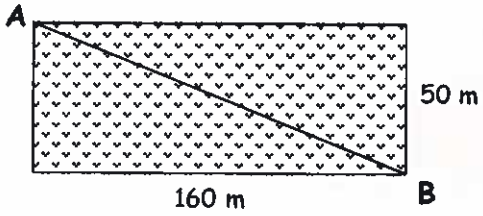
2. (a) What is wrong with the triangle shown ?

   (b) In fact, the length of the hypotenuse has been given incorrectly.

   What should its length be ?



3.

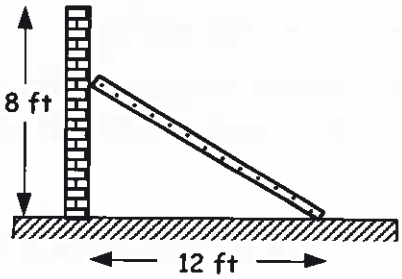


A farmer has a path which runs diagonally across a rectangular field.

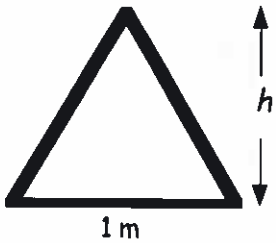
How much longer is it to walk around the outside of the field from A to B than walking across the pathway ?

4. The top of a ladder is placed **three quarters** of the way up an eight foot high wall.

   Find the length of the ladder.



5.



The road sign is in the shape of an equilateral triangle with side 1 metre.

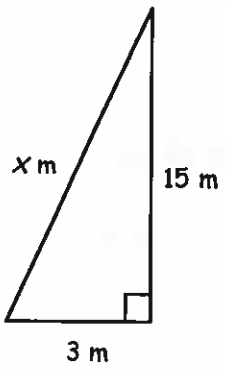
Find the height of the sign (h metres).

Revision Exercise

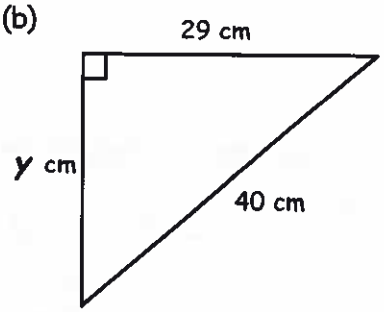
1. Find :- (a) 8^2 (b) 100^2 (c) $\sqrt{100}$ (d) $\sqrt{12}$.

2. Calculate the length of each missing side :-

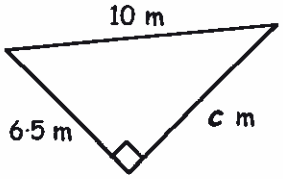
(a)



(b)



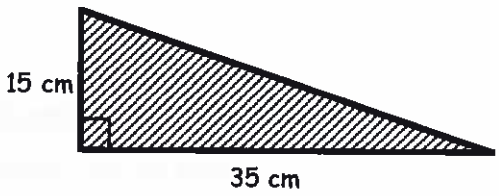
(c)



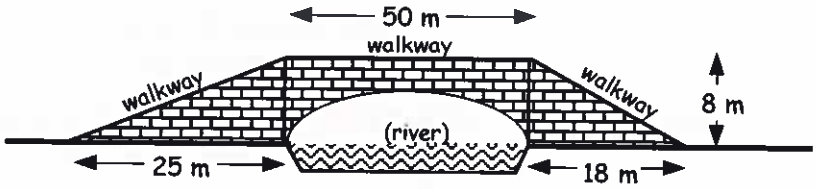
3. A triangular car window frame needs a rubber seal around its perimeter.

Find the perimeter of the window.

(Give your answer to the nearest millimetre).



4. A design for a bridge walkway over a river is as shown.

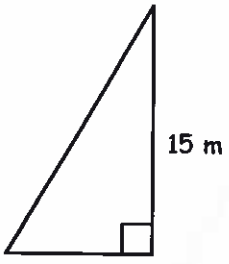


The architect has been given instructions that the **total** walkway length must not exceed 100 metres.

Has the architect designed the bridge properly ?
(Explain your answer in full showing **all** working).

5. The **area** of the triangle shown is 75 cm^2.

Find the length of the sloping side.



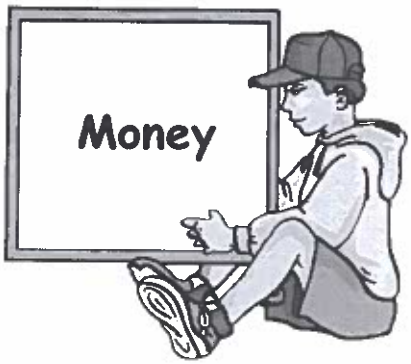
Answers to Chapter 29 (page 127)

1. (a) 62·8 cm (b) 25·12 m
2. (a) 41·12 cm (b) 17·85 cm (c) 53·98 cm
3. (a) 9·6 cm (b) 19·1 m
4. (a) 1256 cm^2 (b) 1384·74 mm^2
5. (a) 100·48 cm^2 (b) 19·625 cm^2 (c) 202·93 cm^2
6. 45·86 cm^2
7. 24·84 cm
8. 3846·5 cm^2
9. (a) 31·4 cm (b) 78·5 cm^2

Answers to Chapter 31 (page 140)

1. (a) $4^4/_5$ (b) $5^1/_4$
2. (a) $^{29}/_6$ (b) $^{72}/_7$
3. 20 slices
4. (a) $^5/_7$ (b) $1^1/_4$ (c) $^4/_6$ ($^2/_3$)
   (d) $8^2/_5$ (e) $3^4/_{15}$ (f) $2^5/_6$
5. (a) $^1/_6$ (b) $^8/_{15}$ (c) 3
   (d) $2^1/_2$ (e) $2^7/_{24}$ (f) $2^1/_4$
6. Tommy now weighs $10^3/_4$ stones
7. $15^3/_5$
8. $25^3/_8$
9. $3^1/_5$
10. $^1/_8$

CHAPTER 8



Exercise 1

1. How many **£1 coins** will you get for :-

   a four £5 notes
   b seven £5 notes
   c eight £10 notes
   d nine £10 notes
   e three £5 and five £10 notes
   f three £5, one £10 and five £20 notes ?

2. How many **£5 notes** will you get for :-

   a two £10 notes
   b three £10 and one £20 note
   c six £10 and two £20 notes
   d eight £10 and one £20 note
   e seven £50 notes
   f five £10 and four £20 notes ?

3. Using a mixture of notes and coins of your choice, list 5 different ways to pay for this camera.

£32·63

4. Find out which countries use the following currency :-

   a Krone b Rupee c Ruble d Zloty.

Exercise 2

1. **Set down** the following and find :-

   a £ 4·78 + £12·36
   b £ 7·49 - £4·63
   c £ 16·25 + £9·99
   d £ 60·00 - 27·68

   e £9·16 + £3·58 f £8·58 - £6·29 g £28·79 + £4·30 h £18 - £12·99.

2. **Set down** and complete each multiplication :-

   a £4·76 x 2
   b £3·94 x 4
   c £8·87 x 6
   d £2·69 x 8

   e £4·57 x 3 f £4·75 x 5 g £2·89 x 7 h £3·26 x 9.

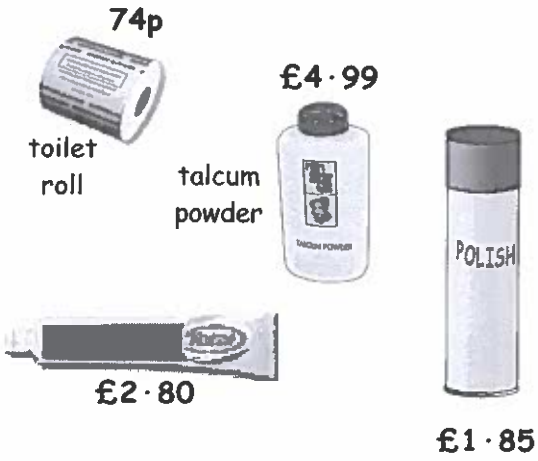
3. **Set down** and complete each division :-

a $2\overline{)£1{\cdot}40}$ b $4\overline{)£6{\cdot}52}$ c $6\overline{)£5{\cdot}40}$ d $8\overline{)£19{\cdot}04}$

e £3·96 ÷ 3 f £12·85 ÷ 5 g £15·19 ÷ 7 h £4·23 ÷ 9.

4. Use the fact that 4 x 7 = 28 to work out :- a 28 x £2·65 b £46·76 ÷ 28.

Exercise 3



1. Calculate the total cost of :-
   - a a tube of toothpaste and two toilet rolls.
   - b a tin of polish and a tin of talc.
   - c two tins of talc. and five toilet rolls.
   - d one of each item.

2. Copy and complete the following bills.

Write what change is left from £25 in each case.

a

	£
2 litre milk cartons at 95p/litre	
4 packs of Bagels at £1·79 per pack	
½ a cucumber at 68p for a whole one	
total	

b

	£
4 kg onions at £0·85 per kg	
3 kg leeks at £2·15 per kg	
½ kg celery at £2·48 per kg	
total	

c

	£
500 g of wire nails at £0·72/100 g	
700 g plasterboard nails at £0·61/100 g	
300 brass screws 9p each	
total	

d

	£
5 trays of marigolds at £2·80 per tray	
2 packs of grass seed at £3·75 per pack	
2 cactus plants at 82p each	
total	

3. I bought **10 sweets**, a mixture of lollies and sugar mice.
   A lolly costs 15p and each sugar mouse costs 7p.
   If the bill came to £1·18, how many of each must I have bought ?

Exercise 4

1. Mrs Barnaby needs 5 plums to bake a pie.

Plums
5 Pack - £1·20
or
26p each

   a How much will she save buying a pack of 5 rather than buying 5 individual plums ?

   b If she had only needed 4 plums for the recipe, how much would she have saved by buying them individually ?

2. 


20 m hose £12·25 | 32 m hose £19·20

Homestore have garden hoses in two sizes.

   a Which is the **better** buy per metre of hose ?

   b Give a reason why you might buy the cheaper one.

3. Which is the best buy here ?

One of the tubs is on special offer. (explain)

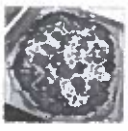
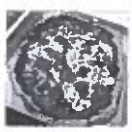


£7·14 — **6 kg**
£4·95 — **4·5 kg**
£3·57 — **3 kg**

Exercise 5

1. Debbie bought a coat, a skirt and a bag from Top Store and the bill came to £111·48.

If the skirt was £24·99 and the bag was £13·99, what was the cost of the coat ?

2. 



Two pizzas and a can of diet cola cost me £21·39.

If a can of cola was priced at £1·65, what was the price of a pizza ?

3. Greggits the Bakers, sells mouth-watering brownies.

A box of 8 costs £8·96 and a pack of 6 costs £6·84.

Which is the **better deal** ? (*Explain your answer with working*).

4. 

Harry bought a new fridge freezer by making a deposit of £38·90 followed by 6 monthly payments of £43·98.

How much did it cost him **altogether** for his fridge freezer ?

5. Four friends went for a meal. If the total bill had been shared equally amongst the 4 of them, each would have had to pay £36·84. Because it was Fred's retiral night, the other three decided to treat him and split the bill 3 ways.

How much did each person really have to pay ?

Revision Exercise

1. Gareth buys a printer costing £47·38.

He hands over two £20 notes and a £10 note.

a How much change should Gareth get ?

b Give an example of what notes and coins he might have in his change.

2. Work out the answers to these :-

a £15·78 + £6·98 b £49·06 - £18·09 c £6·27 x 8 d £16·83 ÷ 9.

3. Strawberry iced buns can be bought in boxes of 4 or boxes of 6.

The box of 4 costs £1·52 and the box of 6 costs £2·16.

Which is the **better** buy ?

(*Explain your answer with working*).

4.

This washing powder comes in 2 sizes.

The 500 gram packet sells at £2·60.

The 700 gram packet sells at £3·57.

Explain which of the two is the **better** buy.

You may use a calculator in the next two questions but must show your working.

5. The total cost for a group of 6 adults to go to the cinema was £59·04.

a What was the cost for each person ?

b Mrs Bradley paid for herself, her mum and her 2 uncles.

How much did Mrs Bradley have to pay ?

6.

SPECIAL OFFER
on ALL NOVELS
BUY 5 - PAY FOR ONLY 4 !!

Mrs Allison ordered 40 novels for her class, paying the normal price, £4·50 each.

a How much should the books cost ?

She then receives a flier from the book company, pointing out their special offer for that month.

b How much would it save her if she were to change to the special offer ?

Exercise 5

1. a 270° b 270° c 225°
   d 270° e 225° f 315°
2. SW
3. South
4. 135°

Revision Exercise

1. a straight b right c acute
   d obtuse e reflex f obtuse
2. a 51° 2° 30° 69° b 126° 174° 95° 136°
   c 90° d 180° e 187° 204°
3. a ∠AUR b ∠JKL c ∠VNK d ∠QRO
4. a 35° b 142°
5. Check Drawings
6. a 90° b 270° c 135° d 45°
7. NW
8. a East b 225° 9. South East

Answers to Chapter 7

Exercise 1

1. a 57 b 42·5 c 83·6 d 178·4
   e 8·7 f 0·3 g 12·34 h 0·307
2. a 567 b 165 c 704 d 950
   e 461·3 f 86·4 g 4·93 h 0·27
3. a 2824 b 3090 c 4830 d 27600
   e 975 f 27·5 g 7070·7 h 900·1
4. a 3·45 kg b 34·5 kg c 345 kg

Exercise 2

1. a 1·52 b 3·78 c 0·595 d 43·76
   e 1·793 f 2·4538 g 1·904 h 1·3
2. a 9·345 b 9·7623 c 0·759 d 0·1603
   e 7·3 f 9·42 g 0·087 h 0·006
3. a 8·4752 b 39·7643 c 9·37 d 0·8361
   e 0·75 f 0·3 g 0·0923 h 0·014
4. a 0·174 g b £3·75

Exercise 3

1. a 10·72 b 17·94 c 91·5 d 321·51
   e 326·96 f 1446·84 g 1397·1 h 2008·74
2. a 58·8 b 140·8 c 30·56 d 168·84
3. 124·5 g
4. £228·83

Exercise 4

1. a 5·49 b 13·73 c 12·69 d 15·83
   e 0·07 f 0·16 g 15·94 h 5·64
2. a 4·9 b 7·4 c 3·02 d 6·39
   e 0·34 f 13·51 g 8·7 h 0·02
3. 48·2 g
4. £8·92
5. 0·492

Exercise 5

1. £195·13
2. 4·714 litres
3. £1686·40
4. £26
5. £28·43
6. £41·67
7. High Drive by 3p per lesson (£22·48, £22·51)
8. £4·81
9. 11·059 kg

Revision Exercise

1. a 8·7 b 3·691 c 45·6 d 830
   e 600·4 f 1990 g 3·48 h 0·037
   i 7·6 j 0·0987 k 5·29 l 0·0582
2. a 24·92 b 28·44 c 1·293 d 3·85
3. £1·82
4. a 9 b £112·50
5. £278·99
6. 758·625 kg
7. 7·9 mpg
8. "Label'em" by 0·3p per label (2·5p and 2·2p)

Answers to Chapter 8

Exercise 1

1. a 20 b 35 c 80 d 90
   e 65 f 125
2. a 4 b 10 c 20 d 20
   e 70 f 26
3. Various
4. a Denmark b India c Russia d Poland

Exercise 2

1. a £17·14 b £2·86 c £26·24 d £32·32
   e £12·74 f £2·29 g £33·09 h £5·01
2. a £9·52 b £15·76 c £53·22 d £21·52
   e £13·71 f £23·75 g £20·23 h £29·34
3. a £0·70 b £1·63 c £0·90 d £2·38
   e £1·32 f £2·57 g £2·17 h £0·47
4. a £74·20 b £1·67

Exercise 3

1. a £4·28 b £6·84 c £13·68 d £10·38
2. a £9·40 b £11·09 c £34·87 d £23·14
3. 6 lollies and 4 sugar mice

Exercise 4

1. a 10p b 16p
2. a Large one b shorter hose will do.
3. Middle one - cheaper per kg

Exercise 5

1. £72·50
2. £9·87
3. 8 pack. 2p cheaper per brownie.
4. £302·78
5. £49·12

Revision Exercise

1. a £2·62 b Various
2. a £22·76 b £30·97 c £50·16 d £1·87
3. Box of 6. 2p each cheaper.
4. Large one better by 1p per 100 kg.
5. a £9·84 b £39·36
6. a £180 b £36

Answers to Chapter 9

Exercise 1

1. a circle b rectangle
   c triangle d rhombus & hexagon
2. 1 square, 5 triangles, 1 parallelogram
3. a 6 b 8 c 10 d 12
4. Pentagon

Exercise 2

1. a equilateral b isosceles
   c scalene
2. a scalene b isosceles
   c equilateral d right angled isosceles

Exercise 3

1. (i) ΔKHT obtuse (ii) ΔYUM acute
   (iii) ΔRSE right (iv) ΔQWN acute
   (v) ΔVCZ obtuse (vi) ΔAFJ acute

Exercise 4

1. a ΔABC acute equilateral
   b ΔDEF acute scalene
   c ΔGHK right angled isosceles
   d ΔLMN obtuse scalene
   e ΔPQR obtuse isosceles

Exercise 5

1. 5·5 cm
2. 27 mm
3. 44 mm (62 mm - A4)
4. a 7 cm b 3·5 cm

Revision Exercise

1. a hexagon b decagon
2. pentagon, equilateral triangle, semi-circle, square isosceles triangle, kite, rectangle, R A triangle
3. a equilateral b isosceles c scalene
4. a acute b right c obtuse
5. obtuse angled scalene triangle HNS
6. 6·1 cm
7. 40 cm

Answers to Chapter 10

Exercise 1

1. a 80 b 26 c 63
   d 7 e 207 f 2·8
2. a 23 b 128 c 6 d 140
3. a +17 b -57 c +6·4 d ÷10

Exercise 2

1. a 9 b 10 c 9
   d 9 e 17 f 8
   g 97 h 4·01 i 4500
2. a 7 b 8 c 11
3. a * ÷ 7 = 20, * = 140 b * + 5·8 = 12·5, * = 6·7

Exercise 3

1. a 8 b 25 c 9
   d 21 e 0 f 100
   g 5 h 20 i 3·6
   j 29 k 9 l 7
2. a p + 11 = 20, p = 9 b 3e = 24, e = 8
   c y + 19 = 32, y = 13
3. 210 ÷ 6 = *, * = 35 £35
4. * ÷ 3 = 9, * = 27 27 rollos

Revision Exercise

1. a * = 11 b * = 15 c * = 9
2. a 16 b 7 c 40
   d 30 e 9 f 0
   g 10 h 9·9 i 120
3. a minus b times c divide d minus
   e divide f times g divide h plus
   i minus
4. a 20 b 41 c 7
   d 64 e 60 f 9
5. a * + 13 = 31 b * = 18 18 pounds
6. a i 200 ii 60
   b i 0·15 ii 975

Answers to Chapter 11

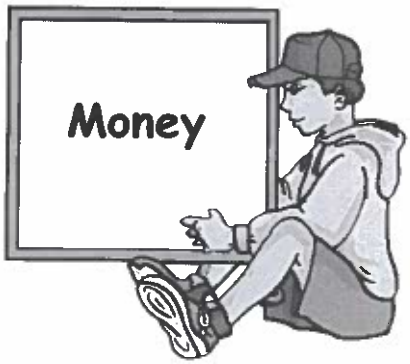
Exercise 1

1. a $\frac{1}{2}$ b $\frac{1}{4}$ c $\frac{1}{3}$ d $\frac{1}{6}$
   e $\frac{1}{12}$ f $\frac{1}{8}$ g $\frac{1}{5}$ h $\frac{1}{8}$

Exercise 2

1. a $\frac{7}{8}$ b $\frac{5}{8}$ c $\frac{2}{5}$ d $\frac{2}{9}$

CHAPTER 2



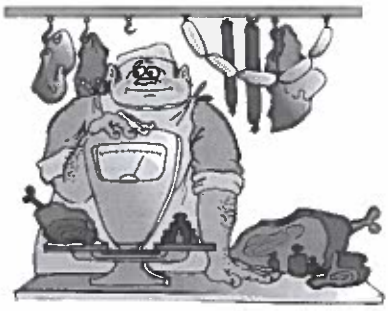
Review 1 Money

1. a Daisy earns £234·70 per week. How much does she earn in a year ?

   b Jamie has a salary of £14 730 per annum. What is his monthly pay ?

   c Azad is paid £1368 per month. What is his annual salary ?

2. Frank works for a butcher. He is paid £12·80 per hour.



   a How much will he earn in a 40 hour week ?

   Last week Frank also worked 8 hours **overtime**, paid at **time and a half**.

   b Calculate how much he earned for his overtime.

   c What was Frank's **total** pay for last week ?

3. a 

   Grant's **gross** pay last year, as a consultant, was £23 760. His **net** pay was £19 477.

   What were his **total deductions** last year ?

   b Dave works as a cleaner and his **net** income this year was £14 324.

   If his **deductions** came to £2179, calculate Dave's **gross** annual income.

4. Phoebe has a **gross** income of £3085 per month.

   She pays £175·50 in National Insurance, £89·75 in Graduated Pension and her Income Tax is 15% of her gross pay.

   a How much are Phoebe's total deductions ?

   b What is her **net** income ?

5. 

   In an office, a line manager's gross wage is £24 350. Her **total deductions** were 21% of her **gross income**.

   a Calculate what the line manager pays in deductions.

   b Calculate what her **net monthly** pay is.

Exercise 1 — Foreign Exchange

British Pound (July 2012)	£1 =
Euro	1·24
American Dollar ($)	1·55
Chinese Yen	9·83
Indian Rupee	85·56
Mexican Peso	21·70
Norwegian Krone	9·40
South African Rand	13·03

1. Tina has £560 to spend on holiday.
   Change her spending money into :-
   a Euros b Krone
   c Rand d Rupee.

2. Harry has a balance of £2340 in his bank account.
   Change his bank account balance into each of the foreign currencies in question 1.

3. Change each of the following prices into Euros :-

a 
£40

b 
£175

c 
£23 600

4. Alan bought his briefcase in Hamburg, Germany for 225€.
   Boris bought the same case in San Francisco, America for $270.
   Calum had paid £176 in Edinburgh for the identical case.
   Who got the best deal ? *Explain.*

5. Change :- a $480 into Yen b 165 600 Rupee into Peso's.

Exercise 2 — Best Buys - Money Management

1. A tin of dog food is offered in two different sizes.
   - The small tin costs £3·45 for 600 grams.
   - The large tin costs £6 for one kilogram.

   Which one is the better deal ? Explain.

2. Which is the better deal for each of the following and explain your answers ?
   a A box of fudge costs £3·99 for a 475 gram box or £5·20 for a 650 gram box.
   b Tennis balls - box of 9 for £19·26 or box of 12 for £25·68.

3. Cartons of apple juice are sold in different sizes.
   Which is the best deal ? *Explain.*

450 ml costs	-	81p
1 litres costs	-	£1·60
2·5 litres costs	-	£3·50

Exercise 3 Best Deal - Services

1. • AAA plumbers charge a £70 call-out and £32·50 per hour.
   • ABC plumbers charge £37·50 per hour with a £50 call-out fee.

   Mr Solis needs a new boiler installed (a three hour job).

   What would be the **cheaper** option ?

2. Two mobile car mechanics have different charges.

   • Zak - £85 for the 1st hour - £25 per hour thereafter

   • Zed - Call-out charge £60 - £30 per hour

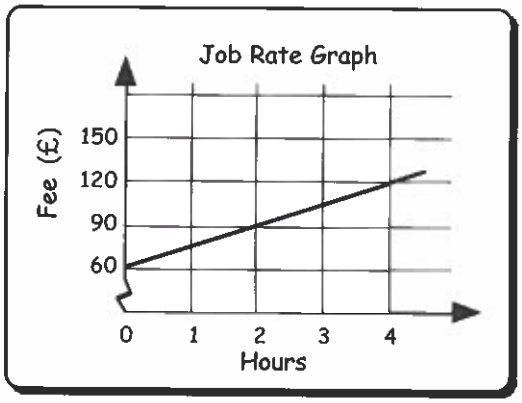
   

   Jackie employed Zak who took 3 hours to fully service her car.

   a How much was she charged in total ?

   b Would she have been **cheaper** if she had called Zed ?

3. Jules is a joiner.
   His charges are shown in the graph.

   a After 0 hours what will he charge ? (*Hint - his call-out fee*).

   b What is his rate per hour ?

   c What would he charge in total for :-

   (i) 5 hours (ii) 10 hours ?

Exercise 4 Best deal - Rates or Contracts

1. Mr T wants the best currency exchange rate to change his £'s into $'s.

   • Xchange gives a rate of $1·52 to the £.

   • £Rate offers $1·54 to the £.

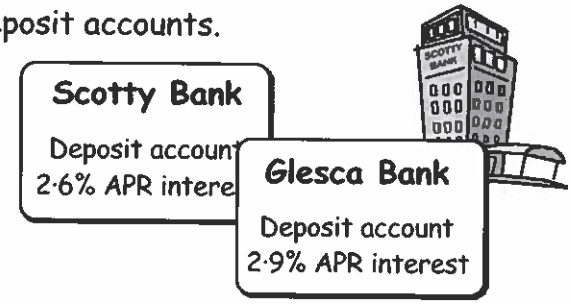
   a What rate should he take ? *Explain.*

   b If Mr T has £4000, how much **less** would he get by choosing £Rate ?

2. Two banks show the interest given on their deposit accounts.

   a Which bank would you choose if you had £5000 to invest ? *Explain.*

   b How much **more** per year would you get from your choice ?



3. Shown is a table of Pay-as-you-go mobile tariffs.

Supplier	Cost per minute	Cost per Text
8G	8·8p	5·8p
Mob4	9p	6p
Vgen	6·9p	6·4p

a Bo uses 8G. She usually uses about 300 minutes and 500 texts per month.

What is her usual monthly payment ?

b Colin has the same monthly payment as Bo. His supplier is Mob4 and he uses about 400 minutes per month.

Approximately how many texts does he use ?

c Dominic uses 600 minutes of calls and 1200 texts.

Which supplier should he use. *Explain.*

d Write a couple of sentences about the advantages or disadvantages of using a contract instead of Pay-as-you-go.

Exercise 5 Credit and Debit Cards

1. Write a couple of sentences on the advantages and disadvantages of using a credit card.

2. Stan is offered two credit cards with an APR shown below.

Benex
APR 36%

AMIX
APR 30%

a What does **APR** stand for.

b Which card should he choose ? *Explain.*

c What percentage interest would he pay **each month** for each of these cards ?

d How much would he owe in interest from each card on £1200 ?

3. Jitane owes her *Amix* card (see above) £2000 and her *Benex* card £4500.

How much interest does she owe this **month** ?

4. Sarah has been *very silly* over the last couple of years. She owes 4 credit cards the following amounts :-

£4500, £7700, £3800, £5500.

Her credit card companies charge **APR's** of :-

28%, 36%, 34% and 38% respectively.

How much interest will she have to pay **each month** in total ?

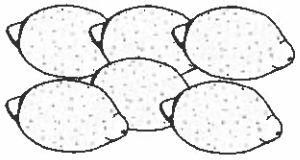
Revisit - Review - Revise 2

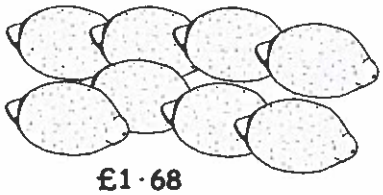
1. Panny Paint Stripper comes in 2 sizes.
   - a small 400 ml bottle costs £1·76 and
   - a 2·5 litre container costs £13·40.

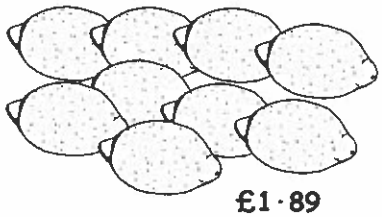
   a How much does it cost per 100 ml for each size ?

   b Which is better value ? Explain.

2. Which is the best buy here - the 6 lemon pack, the 8 pack or the 9 lemon pack ?


£1·26


£1·68

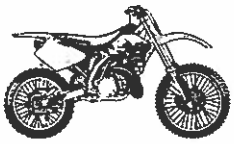

£1·89

3. a How many Euros would I get for £360, at a rate of 1·22 euros to the £ ?

   b How many dollars would I get for £2400 at a rate of $2·42 to the £ ?

   c How many Yen would I get for 1400 Baht if 1 Yen = 0·39 Baht ?

   d I exchanged 340 Krone for 50€. What was the exchange rate ?

4. 

   I bought myself a motorcycle costing £2495.

   I took out a HP contract agreement where I paid a £550 deposit and £211 a month for a year.

   a How much would I have saved if I had paid cash ?

   b State 1 advantage and 1 disadvantage of using Hire Purchase to buy something.

5. I need to hire a van to help move some furniture.

   I estimate it will need to be hired for 5 hours.

   - ***Van-Hire*** charge a basic hiring fee of £25 plus £9·50 per hour after that.
   - ***Vans-For-Hire*** don't charge any basic fee but their rental charges are £20·25 per hour.

   a Which company should I hire it from ? (*Explain*).

   b It actually takes me 8 hours to move all the furniture.

   Would I have been better hiring it from the other company ? (*Explain*).

Answers to Book 3b Homework

Chapter 1 : Powers & Roots

Ch 1 Ex 1 Squares, Cubes & Powers

1. a 16 b 49 c 100
   d 4 e 9 f 1
   g 1 h 64 i 1/4
   j 125 k -1 l 16
2. a 196 b 361 c 1089
   d 625 e 512 f 1728
   g -343 h 1/16
3. a 9 cm^2 b 81 mm^2
   c 121 m^2 d 12·25 cm^2
4. a 41 b 145 c 51
   d 77 e 44 f 38
   g 200 h 0

Ch 1 Ex 2 Square Roots and Cubes

1. a 4 b 6 c 10
   d 1 e 8 f 2
   g 5 h 20
2. a 50 b 100
   c 7000 d 900
3. a 8·5 b 7·1 c 11·4
   d 3·5 e 21·8
4. a 4·69 b 6·08 c 6·71
   d 13·08 e 36·40
5. 15 cm
6. a 10 b 2 c 3
   d 3 e 2

Ch 1 Review - Revisit - Revise 1

1. a 81 mm^2 b 900 cm^2 c 0·25 m^2
2. a 4 b 9 c 25
   d 100 e 1000000
3. a 27 b 16 c 10000
   d 243 e -1
4. a 8 b 10 c 1
   d 9 e 1000
5. a 1400 cm^2 b 61 mm2 c 27000 m^2
6. a 272·3 b 4·4 c 9·9
   d 54 e 133·6 f 604·7

Chapter 2 : Money

Review 1 Money

1. a £12204·40 b £1227·50 c £16416
2. a £512 b £153·60 c £665·60
3. a £4283 b £16503
4. a £728 b £2357
5. a £5113·50 b £1603·04

Ch 2 Ex 1 Foreign Exchange

1. a €694·40 b 5264 Krone
   c 7296·8 Rand d 47913·6 Rupee
2. €2901·60, $3627, 23002·2 Yen
   200210·4 Rupee 50778 Peso
   21996 Krone 30490·2 Rand
3. a €49·60 b €217 c €29264
4. Alan £181·45, Boris £174·19, Calum £176
   Boris got the cheapest deal.
5. a 3044·13 yen b 42000 pesos

Ch 2 Ex 2 Best Buys - Money Management

1. Small 57·5p per 100g Large 60p per 100g
   Small tin better value
2. a small 21p per 25g, large 20p per 25g.
   Larger is cheaper.
   b 9 box £2·14 each, 12 box £2·14. Same price.
3. 450 ml 9p per 50 ml, 1l 8p per 50 ml,
   2·5 l 7p per 50 ml. Largest is best

Ch 2 Ex 3 Best Deal - Services

1. ABC cheaper £162·50, AAA £167·50
2. a £135 b No (£150)
3. a £60 b £15
   c (i) £135 (ii) £210

Ch 3 Cumulative Ex 1 (Chapters 1-3)

1. a 81 mm² b 121 cm² c 2.25 m²
2. a 9 b 64 c 36
   d 144 e 10000 f 8
   g 81 h 100000 i 256
   j -1 k 8 l 10
   m 1 n 1000 o 10
   p 2 q 3
3. a small 20p per 50g, large 23p per 50g
   b small tin is cheaper per 50g
4. per 50 ml - small £1·10, medium 80p, large 91p
   cheapest is medium
5. a CM £54 is cheaper. (Mixer £60)
   b CM £88 is cheaper (Mixer £120)
6. a 28 b 30
   c 36 d 30
7. a 4 b 12
   c 7 d 1
8. a 23, 29 b 53, 59 c 101, 103, 107, 109
9. a $2 \times 2 \times 2 \times 3$
   b $2 \times 2 \times 3 \times 3$
   c $2 \times 2 \times 3 \times 3 \times 5$
   d $2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 5 \times 5$
10. a €562·5 b $2041·20 c 61538·46 Yen
11. £288
12. 9·6%

Chapter 4 : Patterns

Review 3 Percentages, Fractions & Decimals

1. a 0·25 $^1/_4$ b 0·45 $^9/_{20}$
   c 0·78 $^{39}/_{50}$ d 0·71 $^{71}/_{100}$
   e 0·75 $^3/_4$ f 0·125 $^1/_8$
   g 0·005 $^1/_{200}$ h 1·00 $^1/_1 = 1$
2. a 32% b 80% c 2%
   d 90% e 30% f 80%
   g 0·3% h 150%
3. a £90 b 300g c £32
   d 360 ml e $200 f 52 km
4. a £91 b £225 c £1260
   d £24·31 e £385 f £38·40
5. a 1530 mph b 378
6. Sunflower - 232 cm
   Gladiola - 225 cm
   Clematis - 224 cm

Ch 4 Ex 1 Sequences & Patterns

1. a start at 2 then add 3
   b start at 7 then add 6
   c start at 25 then subtract 5
   d start at 98 then subtract 17
   e start at 3 then times by 3
   f start at 1 then times by 6
2. a 17, 20 b 31, 37 c 5, 0
   d 30, 13 e 243, 729 f 1296, 7776
3. a 15, 17 b 21, 25 c 18, 16
   d 22, 10 e 27, 81 f 32, 64
4. 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144
5. a 11×12 b 1001×1002 c $(n+1) \times (n+2)$

Ch 4 Ex 2 Simple Linear Patterns

1. a 1 2 3 4 5 6
   6 12 18 24 30 36
   b $P = 6D$ c 66 d 13
2. a 1 2 3 4 5 6
   9 18 27 36 45 54 $P = 9T$
   b 1 2 3 4 5 6
   60 120 180 240 300 360 $S = 60M$
   c 1 2 3 4 5 6
   5 10 15 20 25 30 $V = 5P$
   d 1 2 3 4 5 6
   8 16 24 32 40 48 $L = 8T$
3. a 0 1 2 3 4 5 6
   0 3 6 9 12 15 18 $y = 3x$
   check linear diagram
   b 0 1 2 3 4 5 6
   0 2 4 6 8 10 12 $y = 2x$
   check linear diagram

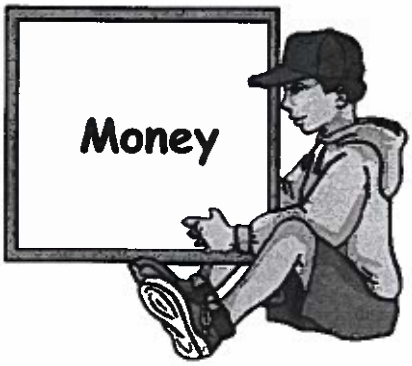
Ch 4 Ex 3 Harder Linear Patterns

1. a 1 2 3 4 5 6
   3 4 5 6 7 8
   b $P = T + 2$ c 23 d 25
2. a 0 1 2 3 4 5
   3 5 7 9 11 13 $y = 2x + 3$
   b 0 1 2 3 4 5
   5 6 7 8 9 10 $y = x + 5$
   c 0 1 2 3 4 5
   -2 1 4 7 10 13 $y = 3x - 2$
   d 0 1 2 3 4 5
   -1 4 9 14 19 24 $y = 5x - 1$
   e -2 -1 0 1 2 3
   -6 -4 -2 0 2 4 $y = 2x - 2$
   f -2 -1 0 1 2 3
   -18 -11 -4 3 10 17 $y = 7x - 4$
3. a -2 -1 0 1 2 3
   -1 2 5 8 11 14 $y = 3x + 5$
   check graph
   b -2 -1 0 1 2 3
   -9 -7 -5 -3 -1 1 $y = 2x - 5$
   Check graph

Ch 4 Revisit - Review - Revise 4

1. a 45, 38 b 100, 81
   c 42, 56 d 50, 100 (coin values)
2. 45 + 55
3. a $S = 7B$ b 77
4. a $P = 2T + 1$ b $G = 4F + 3$
   c $K = 4C - 9$ d $Y = X - 7$

CHAPTER 7



Consolidation

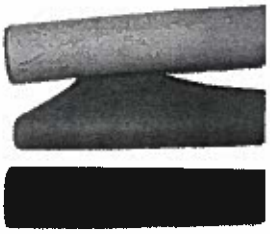
1. Robert buys a new pair of trainers costing £28·99.
   He hands over **two** £20 notes.
   a How much change should Robert get ?
   b Give an example of what notes and coins he might get in his change.

2. Work out the answers to these :-
   a £26·74 + £8·89 **b** £48·06 - £19·17 **c** £8·37 x 7 **d** £27·76 ÷ 8.

3. Cup cakes can be bought in packs of 4 or packs of 6.
   The pack of 4 costs £2·32 and the pack of 6 costs £3·42.
   Which is the **better** buy ?
   (*Explain your answer with working*)

You may use a calculator in the next question but must show your working.

4. Charlie bought new carpets for his house, costing £389 plus £78·99 to fit them.
   He put down £50·99 and paid off the remainder in 12 equal monthly instalments.
   How much did he have to pay each month ?



Exercise 1

1. What does the banking term "ATM" mean ?
2. **a** Use the internet to find out where your nearest ATM is.
   b What services does an ATM provide ?
   c What are the advantages and dangers of using an ATM ?

Exercise 2

1. This card carries an APR charge of 36%
   i.e. you will be charged 3% interest every month.

   How much will Bushra owe after one month if she used her card to buy £150 worth of goods ?

2. Bushra's other credit card has an APR of 30%.

   How much would she owe after one month if she had used :-

   a £70 b £400 c £2300 ?

3.

Card	APR
Xemax	38%
Ariv	25%
Cobank	31%

Bushra is considering other credit cards as shown.

Are any of them better than the two she already has ? (*Explain why*).

Exercise 3

1. Jill saves £25 a week saving for a new fridge costing £295.

   Jan saves £30 per week for a new £366 oven.

   a Who will be able to buy their item first ?

   b By how many weeks ?

2. The Andersons save £75 every week, saving up for a weekend break costing £625.

   a How many weeks will they need to save to be able to afford the holiday.

   b After 6 weeks they notice another travel agent offers the same holiday at £499.

   For how many **more** weeks will they have to save ?

3. Alex decides to embark on a special svings scheme.

   At the end of week 1, he saves, £1. At the end of week 2, he saves £2. At the end of week 3, he saves £4. At the end of week 4, he saves £8 and so on....

   a How much will Alex have saved after 6 weeks ?

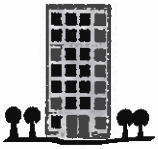
   b He has to pay £5000 after 12 weeks for a cruise. Will he have saved enough ?

   c What is the major problem with Alex's savings scheme ?

Exercise 4

1. I bought a game console for £39·50 and sold it on ebay a year later for £15·99.

   How much of a **loss** did I make ?

2. 

   Frank bought a flat for £88 500.
   He sold it two years later for £113 250.

   How much of a **profit** did Frank make ?

3. Venus bought two vases for a **total** of £1350.
   She sold one for £940 and the other for £710.

   How much profit did Venus make altogether ?

4. 

   Jamie bought a minibus for £8190.
   When he sold it a year later, he made a loss of £3870.

   For how much did Jamie sell the minibus ?

5. A shopkeeper bought a crate of 10 christmas trees for a **total** of £185.
   She sold **each** tree for £29·25.

   How much profit did she make altogether after selling all 10 trees ?

Exercise 5

1. Alice buys a £145 tennis outfit from a new sports catalogue.
   She is given an *introductory* **discount** of £15.

   How much does Alice pay for the outfit ?

2. 

   When Henry bought a £112 camera he was given an £11·20 **discount**.

   How much did he pay for his camera ?

3. Sammy bought a pack of lessons for £210. He was given a 10% **discount**.

   How much did he pay for his pack of driving lessons ?

4. Wilma bought four new tyres for a total of £472 and got a 25% **discount**.

   How much did she pay for the tyres ?

5. Cheryl and Dave paid £85·50 for dinner, which included a pre-theatre discount of £17·50.

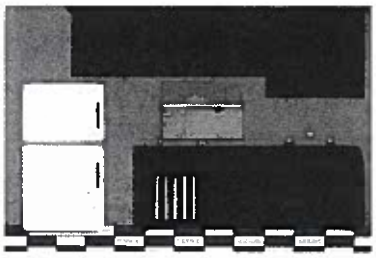
   How much was the original cost of the meal ?

Exercise 6

1. Helen bought a new TV by paying a deposit of £50 and followed this with 10 monthly payments of £30·50.

   a Calculate how much Helen paid in total using the Hire Purchase method.

   b How much **cheaper** would it have been if she had paid cash ?

2. 

   John was quoted £3220 to renew his kitchen units. He couldn't afford to pay cash so took out a Hire Purchase agreement.
   His deposit was £200 and then 15 monthly payments of £220·80 each.

   a How much did it cost John for the new units ?

   b How much **more** was this than the cash price ?

3. Jason wanted to buy a new car which was priced at £8460. The salesman allowed him to make a deposit of £900 and pay the balance over 36 months at **no extra cost** !

   a After paying the £900 deposit, how much did Jason still owe ?

   b If he paid this evenly over the 36 months, how much did he pay each month ?

4. 

   Beth bought her wedding dress for £2450.

   She agreed to pay a deposit of £250 and pay the balance over 10 months at no extra charge.

   a After paying the deposit, how much did she still have to pay for her dress ?

   b How much did this leave her to pay each month ?

5. Bill has 3 ways of paying for his new £10 500 car.

   - If he pays cash, he will receive a 5% discount off the price.
   - If he takes out a bank loan over a year, he will pay 5% in interest.
   - If he takes out a hire purchase agreement, he has to make a deposit of £1050, followed by 18 monthly payments of £555.

   a Calculate the **difference** in the value between the dearest and the cheapest method of buying his car.

   b Why might Bill not automatically choose the cheapest method ?

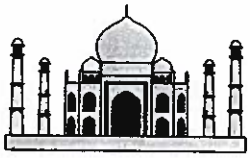
Exercise 7

1. Addison flew to Italy and changed £350 to euros.

   How many euros did he receive ? (£1 = 1·23 €)

2. Betty changed £800 to euros before going for a week to Paris.

   How many euros did she get ? (£1 = 1·23 €)



3. The Johnstons changed £1200 to Rupees for their holiday to India.

   How many Rupees did they receive ? (£1 = 86·2 rupees)

4. 

   For our two week stay in Mexico, we took £1500 which we changed to Pesos.

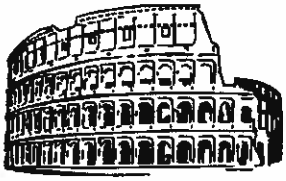
   How many Pesos did we get ? (£1 = 20·9 pesos)

5. Is it dearer to buy this camcorder in :-

   Scotland - £175 or Germany - 220 euros ? (£1 = 1·23 €)

Exercise 8

(£1 = 1·23 €)



1. William returned from Rome with 92·25 euros.

   When he changed it back to £'s, how many did he get ?

2. Cindy came home from Tenerife with 12·3 euros.

   How much did she receive when she took it to the bank and exchanged it for £'s ?

3. Tony had £950 to spend on his holiday to Hong Kong.

   He spent 8060 dollars on sightseeing trips and 3900 dollars on food and drink.

   How many pounds did he have left ? (£1 = HK$13)

4. Kate took £1600 worth of dollars to the USA. (£1 = $1·60)

   She spent 1256 dollars travelling around, 486·70 dollars on a day trip to a theme park and 753·30 on presents.

   When she came home, she changed her dollars back into pounds.

   How many did she get ?

Revision Exercise

Qu 1 - 5 non calculator, Qu 6 - 9 calculator may be used

1. Shona had £185 to fill her freezer with butcher meat.

She bought sirloin steak for £74·75, legs of lamb for £62·95 and spent the rest on pork chops.

How much did she spend on pork chops ?

2. Which is the best buy here .... the 6-pack, the 8-pack or the 9-pack of Cola ?

£1·80

£2·32

£2·52

3. Alistair changed £500 into Euros at a rate of £1 = €1·21.

How many Euros did he receive ?

4. George saves £18·50 every week for 8 weeks to buy a computer desk costing £185.

How many **more** weeks will he have to save before he can afford the desk ?

5. Rod bought a new guitar for £235·65. He sold it soon after for £308.

What was his **profit** ?

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6. Sadie changed £1800 into Australian dollars at a rate of £1 = $1·48. She spent $945 in Sydney and $1404 in Melbourne.

   a How many dollars did she have left ?

   b If she changed the remaining dollars back into £'s at a new rate of £1 = $1·50, how much would she receive ?

7. 

Mr Gold bought 200 rings at £22·50 each.

He sold 150 for £28 each but had to settle for selling the remainder at half price.

He still made a profit - how much ?

8. Tulisa bought a van for £9600. A year later she sold it making a **loss** of 25%.

How much did she sell the van for ?

9. A sweetshop owner buys 50 kg of Jelly Beans for £280. He then packs them into 200 gram jars.

   a How many jars can be made from the 50 kg ?

   b If he sells each jar for £1·70, how much **profit** can be made ?

Exercise 5

1. a 270° b 270° c 225°
   d 270° e 225° f 315°
2. SW
3. South
4. 135°

Revision Exercise

1. a straight b right c acute
   d obtuse e reflex f obtuse
2. a 51° 2° 30° 69° b 126° 174° 95° 136°
   c 90° d 180° e 187° 204°
3. a ∠AUR b ∠JKL c ∠VNK d ∠QRO
4. a 35° b 142°
5. Check Drawings
6. a 90° b 270° c 135° d 45°
7. NW
8. a East b 225° 9. South East

Answers to Chapter 7

Exercise 1

1. a 57 b 42·5 c 83·6 d 178·4
   e 8·7 f 0·3 g 12·34 h 0·307
2. a 567 b 165 c 704 d 950
   e 461·3 f 86·4 g 4·93 h 0·27
3. a 2824 b 3090 c 4830 d 27600
   e 975 f 27·5 g 7070·7 h 900·1
4. a 3·45 kg b 34·5 kg c 345 kg

Exercise 2

1. a 1·52 b 3·78 c 0·595 d 43·76
   e 1·793 f 2·4538 g 1·904 h 1·3
2. a 9·345 b 9·7623 c 0·759 d 0·1603
   e 7·3 f 9·42 g 0·087 h 0·006
3. a 8·4752 b 39·7643 c 9·37 d 0·8361
   e 0·75 f 0·3 g 0·0923 h 0·014
4. a 0·174 g b £3·75

Exercise 3

1. a 10·72 b 17·94 c 91·5 d 321·51
   e 326·96 f 1446·84 g 1397·1 h 2008·74
2. a 58·8 b 140·8 c 30·56 d 168·84
3. 124·5 g
4. £228·83

Exercise 4

1. a 5·49 b 13·73 c 12·69 d 15·83
   e 0·07 f 0·16 g 15·94 h 5·64
2. a 4·9 b 7·4 c 3·02 d 6·39
   e 0·34 f 13·51 g 8·7 h 0·02
3. 48·2 g
4. £8·92
5. 0·492

Exercise 5

1. £195·13
2. 4·714 litres
3. £1686·40
4. £26
5. £28·43
6. £41·67
7. High Drive by 3p per lesson (£22·48, £22·51)
8. £4·81
9. 11·059 kg

Revision Exercise

1. a 8·7 b 3·691 c 45·6 d 830
   e 600·4 f 1990 g 3·48 h 0·037
   i 7·6 j 0·0987 k 5·29 l 0·0582
2. a 24·92 b 28·44 c 1·293 d 3·85
3. £1·82
4. a 9 b £112·50
5. £278·99
6. 758·625 kg
7. 7·9 mpg
8. "Label'em" by 0·3p per label (2·5p and 2·2p)

Answers to Chapter 8

Exercise 1

1. a 20 b 35 c 80 d 90
   e 65 f 125
2. a 4 b 10 c 20 d 20
   e 70 f 26
3. Various
4. a Denmark b India c Russia d Poland

Exercise 2

1. a £17·14 b £2·86 c £26·24 d £32·32
   e £12·74 f £2·29 g £33·09 h £5·01
2. a £9·52 b £15·76 c £53·22 d £21·52
   e £13·71 f £23·75 g £20·23 h £29·34
3. a £0·70 b £1·63 c £0·90 d £2·38
   e £1·32 f £2·57 g £2·17 h £0·47
4. a £74·20 b £1·67

Exercise 3

1. a £4·28 b £6·84 c £13·68 d £10·38
2. a £9·40 b £11·09 c £34·87 d £23·14
3. 6 lollies and 4 sugar mice

Exercise 4

1. a 10p b 16p
2. a Large one b shorter hose will do.
3. Middle one - cheaper per kg

Exercise 5

1. £72·50
2. £9·87
3. 8 pack. 2p cheaper per brownie.
4. £302·78
5. £49·12

Revision Exercise

1. a £2·62 b Various
2. a £22·76 b £30·97 c £50·16 d £1·87
3. Box of 6. 2p each cheaper.
4. Large one better by 1p per 100 kg.
5. a £9·84 b £39·36
6. a £180 b £36

Answers to Chapter 9

Exercise 1

1. a circle b rectangle
   c triangle d rhombus & hexagon
2. 1 square, 5 triangles, 1 parallelogram
3. a 6 b 8 c 10 d 12
4. Pentagon

Exercise 2

1. a equilateral b isosceles
   c scalene
2. a scalene b isosceles
   c equilateral d right angled isosceles

Exercise 3

1. (i) ΔKHT obtuse (ii) ΔYUM acute
   (iii) ΔRSE right (iv) ΔQWN acute
   (v) ΔVCZ obtuse (vi) ΔAFJ acute

Exercise 4

1. a ΔABC acute equilateral
   b ΔDEF acute scalene
   c ΔGHK right angled isosceles
   d ΔLMN obtuse scalene
   e ΔPQR obtuse isosceles

Exercise 5

1. 5·5 cm
2. 27 mm
3. 44 mm (62 mm - A4)
4. a 7 cm b 3·5 cm

Revision Exercise

1. a hexagon b decagon
2. pentagon, equilateral triangle, semi-circle, square isosceles triangle, kite, rectangle, R A triangle
3. a equilateral b isosceles c scalene
4. a acute b right c obtuse
5. obtuse angled scalene triangle HNS
6. 6·1 cm
7. 40 cm

Answers to Chapter 10

Exercise 1

1. a 80 b 26 c 63
   d 7 e 207 f 2·8
2. a 23 b 128 c 6 d 140
3. a +17 b −57 c +6·4 d ÷10

Exercise 2

1. a 9 b 10 c 9
   d 9 e 17 f 8
   g 97 h 4·01 i 4500
2. a 7 b 8 c 11
3. a * ÷ 7 = 20, * = 140 b * + 5·8 = 12·5, * = 6·7

Exercise 3

1. a 8 b 25 c 9
   d 21 e 0 f 100
   g 5 h 20 i 3·6
   j 29 k 9 l 7
2. a p + 11 = 20, p = 9 b 3e = 24, e = 8
   c y + 19 = 32, y = 13
3. 210 ÷ 6 = *, * = 35 £35
4. * ÷ 3 = 9, * = 27 27 rollos

Revision Exercise

1. a * = 11 b * = 15 c * = 9
2. a 16 b 7 c 40
   d 30 e 9 f 0
   g 10 h 9·9 i 120
3. a minus b times c divide d minus
   e divide f times g divide h plus
   i minus
4. a 20 b 41 c 7
   d 64 e 60 f 9
5. a * + 13 = 31 b * = 18 18 pounds
6. a i 200 ii 60
   b i 0·15 ii 975

Answers to Chapter 11

Exercise 1

1. a $\frac{1}{2}$ b $\frac{1}{4}$ c $\frac{1}{3}$ d $\frac{1}{6}$
   e $\frac{1}{12}$ f $\frac{1}{8}$ g $\frac{1}{5}$ h $\frac{1}{8}$

Exercise 2

1. a $\frac{7}{8}$ b $\frac{5}{8}$ c $\frac{2}{5}$ d $\frac{2}{9}$