



Mathematics



Department

S1

Daily Homework Booklet (August – October)



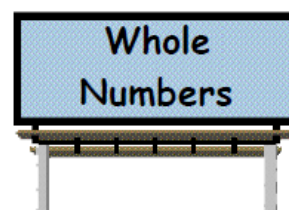
Contents

- Page 3 - Whole Numbers**
- Page 9 - Types of Numbers**
- Page 12 - Decimals**
- Page 19 - Integers**
- Page 24 - Algebra**

Chapter 1



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



Exercise 1

- Write the following numbers out fully in words :-
 (a) 3040 (b) 5801 (c) 20 300 (d) 40 050 (e) 10 010 010
- Write the following numbers out fully in words:-
 (a) sixteen thousand and one (b) Eight hundred thousand and eighty
 (c) ten million, one hundred thousand (d) one hundred million and ten.
- Put the following sets of numbers in order, highest first:-
 (a) 9048, 9090, 8999, 10 010 (b) 10 999, 11 001, 9999, 10 090, 10 100, 100 000
- Write down the number that is :-
 (a) 200 after 8912 (b) 101 before 10 050
 (c) 80 008 before 170 000 (d) 2000 after 199 400
- What number lies half-way between :-
 (a) 10 000 and 15 000 (b) 8500 and 10 000
- Write out in figures :-
 (a) 100 million (b) 0.5 million (c) 3.5 million (d) 0.8 million.



Exercise 2

- Do the following mentally. Just write down the answers to :-
 (a) $57 + 48$ (b) $123 + 490$ (c) $530 - 170$ (d) $11\,000 - 8550$
- Do the following mentally :-
 (a) A train carrying 84 passengers stops at a station and 27 get off the train. How many passengers are still on the train?
 (b) One hundred and ninety two passengers disembark from an aeroplane. If there are two hundred and seventeen passengers still on board, how many passengers were originally on the plane?



cont'd

this is chapter 1

- (c) The population of Aytown is 48 700.
The population of Beestone is 57 500.

- (i) Write the total population of both towns.
(ii) How many more people live in Beestone than Aytown?



3. The population of Ceetown is 40 000.
Of this population there are 16 500 men, 14 800 women and the rest are children.
How many children live in Ceetown?

4. In Pascals's triangle the number 1 appears at the top and at each end of subsequent rows as shown.
To find a number inside the triangle add the two numbers above it.

row 0				1			
row 1			1	1			
row 2			1	2	1		
row 3		1	3	3	1		
row 4		1	4	1	
row 5	1	1

- (a) Copy and complete the triangle up to row 5.
(b) Continue the numbers up to row 10.

Exercise 3

1. Write down the answers to the following :-

- | | | | |
|-----------------------|------------------------|------------------------|------------------------|
| (a) 22×10 | (b) 10×39 | (c) 104×10 | (d) 10×340 |
| (e) 2020×10 | (f) 34×100 | (g) 100×40 | (h) 101×100 |
| (i) 2010×100 | (j) 8100×300 | (k) 21×1000 | (l) 1000×70 |
| (m) 200×1000 | (n) 3050×1000 | (o) 1000×1000 | (p) 5000×3000 |

2. There are 1000 ml (millilitres) in 1 litre.

- How many ml in :-
- | | | | |
|----------------|----------------|-------------------|--|
| (a) 4 litres | (b) 30 litres | (c) 12 litres | |
| (d) 150 litres | (e) 100 litres | (f) 1000 litres ? | |

3. During Summer three thousand fly's are produced every day in a forest.

How many fly's would be produced in July?



this is chapter 1

Exercise 4

1. Write down the answers to the following :-

- (a) $20 \div 10$ (b) $300 \div 10$ (c) $14\ 000 \div 10$ (d) $200\ 000 \div 10$
 (e) $1\ 000\ 000 \div 10$ (f) $400 \div 100$ (g) $8000 \div 100$ (h) $5400 \div 100$
 (i) $99\ 000 \div 100$ (j) $120\ 400 \div 100$ (k) $8000 \div 1000$ (l) $42\ 000 \div 1000$
 (m) $870\ 000 \div 1000$ (n) $909\ 000 \div 1000$ (o) $1000 \div 1000$

2. There are 1000 ml (millilitres) in a litre.

How many litres in :- (a) 50 000 ml (b) 100 000 ml (c) a million litres?

3. A virus grows at a steady rate and produces 900 million bacteria in 10 hours.

How many bacteria will it produce in one hour?

**Exercise 5**

1. Copy the following and complete the calculation :-

- (a)
$$\begin{array}{r} 571 \\ \times 3 \\ \hline \end{array}$$
 (b)
$$\begin{array}{r} 435 \\ \times 7 \\ \hline \end{array}$$
 (c)
$$\begin{array}{r} 708 \\ \times 9 \\ \hline \end{array}$$
 (d)
$$\begin{array}{r} 5555 \\ \times 8 \\ \hline \end{array}$$

2. Rewrite each if these in the above form and complete the calculation :-

- (a) 207×6 (b) 824×8 (c) 1057×4 (d) 5×888

3. Show all your working in answering the following questions :-

- (a) Mrs. Brown is paid £1408 a month. How much would she earn in 9 months?
 (b) How many hours in a week?
 (c) How many seconds in 4 hours?
 (d) Find $8 \times 4 \times 56$.

4. Find $10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$.

**Exercise 6**

1. Set down and complete :-

- (a)
$$\begin{array}{r} 248 \\ \times 26 \\ \hline \dots\dots\dots \\ \dots\dots\dots 0 \\ \hline \dots\dots\dots \\ \hline \end{array}$$
 (b)
$$\begin{array}{r} 546 \\ \times 59 \\ \hline \dots\dots\dots \\ \dots\dots\dots 0 \\ \hline \dots\dots\dots \\ \hline \end{array}$$
 (c)
$$\begin{array}{r} 704 \\ \times 72 \\ \hline \dots\dots\dots \\ \dots\dots\dots \\ \hline \dots\dots\dots \\ \hline \end{array}$$
 (d)
$$\begin{array}{r} 555 \\ \times 55 \\ \hline \dots\dots\dots \\ \dots\dots\dots \\ \hline \dots\dots\dots \\ \hline \end{array}$$

2. Set down in the manner shown above and find :-

- (a) 204×24 (b) 157×83 (c) 941×19 (d) 3241×237

Exercise 7

1. Copy the following and complete the calculation :-

(a) $7 \overline{)3808}$

(b) $5 \overline{)9265}$

(c) $6 \overline{)7434}$

(d) $8 \overline{)5216}$

2. Set down in the manner shown above and complete the calculation :-

(a) $7277 \div 7$

(b) $5175 \div 9$

(c) $\frac{4506}{6}$

(d) $\frac{6016}{8}$

3. Show all your working in answering the following questions :-

(a) How many weeks are in 343 days?

(b) Golf balls are packed with 6 in each box.

How many boxes are needed for 258 balls?

(c) A nine hole golf course has length 1973 yards.

Find the average length of each hole.

(d) A pack of golf tees contains 8 tees.

How many packs are needed for 2248 tees?



4. Find the remainder each time :-

(a) $412 \div 7$

(b) $555 \div 4$

(c) $1000 \div 3$

(d) $4000 \div 7$

5. Marbles are packed into packets of nine.

(a) How many packets are needed for 3871 marbles?

(b) How many marbles are left over?



6. You may use a calculator here, but show how you obtained your answers :-

(a) $471 \div 14$

(b) $888 \div 33$

(c) $1000 \div 85$

(d) $1111 \div 123$.

Exercise 8

1. Try to do the following mentally :-

(a) 32×30

(b) 41×60

(c) 50×321

(d) 404×90

(e) 12×300

(f) 42×400

(g) 500×21

(h) 800×312

(i) 9021×30

(j) 312×7000

(k) $2000 \div 20$

(l) $4400 \div 400$

(m) $80400 \div 200$

(n) $1 \text{ million} \div 2000$

(o) $10 \text{ million} \div 50000$



this is chapter 1

2. Calculate each of the following (not necessarily mentally) :-

- (a) 224×30 (b) 512×80 (c) 40×875 (d) 123×200
 (e) 414×300 (f) 6000×41 (g) $20\,200 \times 40$ (h) 2012×800
 (i) $986 \times 20 \times 50 \times 40$ (j) $20 \times 30 \times 87 \times 50 \times 10$

3. A box contains 50 matches.

How many matches are in :- (a) 50 boxes (b) 231 boxes?

4. An equal amount of 34 100 marbles have to be put into 200 jars.

How many marbles will be in each jar?

5. A jar hold 340 sweets. A box hold 20 jars. A crate holds 30 boxes.

How many sweets would be in 20 crates ?



Exercise 9

1. Round to the nearest 10 :-

- (a) 71 (b) 78 (c) 129 (d) 1995

2. Round to the nearest 100 :-

- (a) 291 (b) 78 (c) 781 (d) 23 559

3. Round to the nearest 1000 :-

- (a) 4500 (b) 7299 (c) 18 901 (d) 1 234 567

4. Sound travels through water at a speed of 1460 metres per second. Round this figure to the nearest :-

- (a) 10 (b) 100 (c) 1000.

5. A fossil was discovered and was carbon dated at 127 891 years old. Round this figure to the nearest :-

- (a) 10 (b) 100 (c) 10 000 (d) 100 000.

Exercise 10



Estimate each of the problems below mentally.

1. Round each answer and give an estimate to :-

- (a) 59×19 (b) 402×99 (c) 379×320
 (d) $894 \div 38$ (e) $512 \div 22$ (f) $1961 \div 197$



2. Nineteen houses in a street use 311 litres of water each every day.
How many litres of water is this altogether?

3. The number of termites found in 196 mounds was 131 089.
How many on average would each mound have ?

this is chapter 1

Revision Exercise

- Write out the number 2 040 800 in words.
- Write these numbers using figures :- (a) one hundred thousand and thirty (b) 10.5 million.
- Try these questions mentally :-
 - 18×10
 - 45×100
 - 1000×432
 - $23 \times 20 \times 30$
 - $780 \div 20$
 - 23×30
 - 821×40
 - $230\,000 \div 1000$
 - $39\,000 \div 300$
 - $4900 \div 700$
 - $4\,963\,000 \div 700$
 - A fishing trip company stocks 320 jars of worms. Each jar contains 30 worms. How many worms in total does the company stock?
 - On a fish farm 23 400 fish are kept in 30 tanks. If each tank has the same number of fish, how many fish are in each tank?

**Show all working for question 4 to 6.**

- At the cup final the attendance was : Rovers 12 829 supporters, United 13 482 supporters.
 - What was the total attendance?
 - How many more United supporters were there?
 - Seven of the United team were being paid £8435 each. How much is this in total?
 - Six Rovers players were being paid a total of £45 812. If they were paid equal amounts, how much were they paid each ?
- Boy band BLoos are buying a new tour bus which costs £143 850. Round this number to the nearest :- (i) £100 (ii) £1000 (iii) £10 000



- The band are paying over 48 months. Round each number to 1 figure accuracy and give an estimate for each monthly payment.
- The bus can seat 36 passengers. How many trips will the bus have to make to transport all 226 tour crew?



- John has a CD collection. When he puts them in piles of two, three or four he has one left over. He has none left when he puts them in piles of seven. What is the least number of records John can have?



Chapter 5



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

Types of Numbers

Exercise 1

(In the following exercises, disregard the **TRIVIAL** multiple 0)

1. (a) List the first 8 multiples of 6.
 (b) List the first 4 multiples of 13.
 (c) List all the multiples of 5 between 19 and 41.
 (d) List all the multiples of 7 between 80 and 110.

2. (a) List the first 12 multiples of 3.
 (b) List the first 10 multiples of 4.
 (c) List the common multiples of 3 and 4.
 (d) Write down the lowest common multiple (l.c.m.) of 3 and 4.

3. Find the l.c.m. of :-

(a) 4 and 5	(b) 5 and 6	(c) 2 and 7	(d) 10 and 12
(e) 2, 4 and 6	(f) 4, 5 and 6	(g) 3, 5 and 7	(h) 6, 7 and 8.



4. In a musical score, three clarinets begin by hitting a B^b (B flat) as the first note.

From this note,

- the first clarinet hits the B flat note every 4 beats,
- the second clarinet hits the B flat note every 5 beats,
- and the third clarinet hits the B flat note every 10 beats.

- (a) After how many beats will all three clarinetists hit the B flat note at the same time again?
- (b) If the musical score lasts for 300 beats, how many times will all three clarinets hit the B flat note simultaneously (at the same time)?



Exercise 2

1. List all the factors of :-

(a) 10

(b) 15

(c) 23.

2. (a) List all the factors of 12.

(b) List all the factors of 20.

(c) List all the common factors of 12 and 20.

(d) Write down the highest common factor (h.c.f.) of 12 and 20.



3. Find the h.c.f. of :-

(a) 8 and 10

(b) 16 and 24

(c) 20 and 28

(d) 30 and 45

(e) 16 and 80

(f) 21 and 36

(g) 35 and 84

(h) 23 and 32

4. Ted, Ned and Zed are salesmen. They all call into the office on the **first day** of each month for a meeting.

After this,

- Ted comes in every second day,

- Ned comes in every third day

- and Zed comes in every fourth day.



How many days in August will all three be together in the office ?

Exercise 3

1. (a) Explain why the number thirteen **IS** a prime number.

(b) Explain why the number nine is **not** a prime number.

(c) Explain why the number one is **not** a prime number.

2. List all the prime numbers between :-

(a) 20 and 30

(b) 40 and 50

(c) 90 and 100

(d) 100 and 120



3. Look at the list of prime and composite numbers :-

4, 11, 16, 39, 1, 2, 47, 1005

From the list write down all the :- (a) prime numbers (b) composite numbers.

4. Explain why each of the following numbers is not a prime number.

(a) 1 111 112

(b) 7777

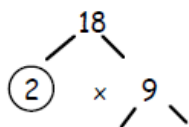
(c) 135 790

(d) (43×59) .

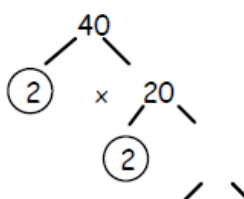
Exercise 4

1. **COPY** and complete each of the following prime factorisations :-

(a)



(b)



2. Find the prime factorisations of :-

(a) 12

(b) 30

(c) 32

(d) 75

(e) 100

(f) 512

(g) 47

(h) 105

(i) 51.

Revision Exercise

1. (a) List all the multiples of 8 between 30 and 60.

(b) List all the multiples of 3 between 80 and 100.

2. Find the lowest common multiple of :-

(a) 4 and 6

(b) 5 and 8

(c) 3 and 7

(d) 2, 3 and 6

(e) 3, 5 and 9.

(f) 2, 3, 4 and 5.

3. List all the factors of :-

(a) 18

(b) 29

(c) 32.

4. List the highest common factor of :-

(a) 9 and 15

(b) 100 and 225

(c) 12, 20 and 36.

5. List all the prime numbers between :-

(a) 10 and 20

(b) 60 and 70

(c) 80 and 90.

6. Find the prime factors of :-

(a) 33

(b) 125

(c) 360.

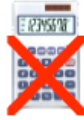
Chapter 13



Decimals

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

Exercise 1

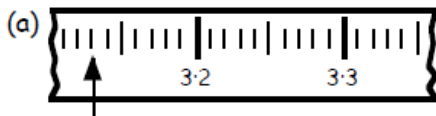


1. What does the 9 stand for in each of the following numbers :-
 (a) $291\cdot743$ (b) $1\cdot094$ (c) $0\cdot954$ (d) $3\cdot019$?

2. What is the number that is $\frac{9}{100}$ **down** from $4\cdot15$?

3. What number lies **half way** between $0\cdot4$ and $0\cdot32$?

4. To which numbers are each of the following arrows pointing :-



5. Round these numbers to 1 decimal place :-

- (a) $6\cdot472$ (b) $8\cdot417$ (c) $25\cdot496$ (d) $27\cdot95$.

6. Bobby weighs $71\cdot64$ kilograms and Thomasina weighs $65\cdot89$ kilograms.

- (a) What is their combined weight ?
 (b) By how much is Bobby heavier than Thomasina ?



7. (a) When 1000 safety pins are weighed, their total weight is $34\cdot8$ grams.
 What is the weight of 1 safety pin ?



- (b) One hundred identical books are placed along a shelf.
 Each book is $3\cdot4$ cm thick.

What is the minimum length of shelving required to stock the books ?



8. Set down and find :-

- (a) $5\cdot9 \times 6$ (b) $17\cdot2 \times 7$ (c) $4\cdot86 \times 8$ (d) $14\cdot39 \times 9$
 (e) $17\cdot4 \div 6$ (f) $123\cdot2 \div 7$ (g) $367\cdot2 \div 8$ (h) $316\cdot8 \div 9$.

* You may use a **CALCULATOR** in the next question

9.



Mrs Chalmers paid a deposit of £43 when she bought a tumble drier priced £457.

She then had to pay the remainder by making 24 equal monthly instalments.

How much had she to pay per month ?



Exercise 2



1. Show all your working for the following (remember - **NO** calculator) :-

- (a) $27.65 + 38.97$ (b) $34.1 - 9.475$ (c) $15 + 8.74 + 0.087$
 (d) $8.1 - 2.47 + 6.883$ (e) $6 + 2.473 - 8.399$ (f) $5.1 - 3.09 - 1.986$
 (g) $53.2 - 9.68 + 35.9$ (h) $54.57 + 6.274 - 12.558$ (i) $30.1 - 9.749 - 6.08$

2. Mrs Galbraith bought 3 steaks at the butcher's. Their total weight was 7.85 pounds.



If the large steaks weighed 2.93 pounds and 3.34 pounds, find the weight of the smallest steak.

3. On Feb. 29th 2004, the temperature at noon in Inverness was -14.6°C . On the same day, further south in Falkirk the temperature at noon was -6.9°C .



(a) What was the difference in temperature at noon between both places ?

By 4 pm that day, the temperature in Inverness had risen by 4.7 degrees, whereas in Falkirk the temperature had fallen by 0.8 degrees.



(b) What was the difference in temperature at 4 pm between Inverness and Falkirk ?

4. COPY the following and fill in the correct numbers to replace the squares :-

$$\begin{array}{r} 7 \cdot 1 \blacksquare \blacksquare \\ + \blacksquare \cdot \blacksquare 8 2 \\ \hline 9 \cdot 1 7 0 \end{array}$$

$$\begin{array}{r} 8 \cdot \blacksquare 1 \blacksquare \\ - \blacksquare \cdot 2 \blacksquare 7 \\ \hline 3 \cdot 0 9 6 \end{array}$$

$$\begin{array}{r} \blacksquare \cdot 2 7 \blacksquare \\ 3 \cdot \blacksquare 8 4 \\ + 6 \cdot 6 \blacksquare 9 \\ \hline \blacksquare 2 \cdot 5 7 6 \end{array}$$

5. Have a go at these :-

- (a) $(-1.7) + 7.9$ (b) $(-1.8) + 1.9$ (c) $(-3.3) - 3.3$
 (d) $7.4 + 2.79 - 9$ (e) $(-5.68) + 7.255$ (f) $(-9.1) + 9.032$
 (g) $9.6 + 1.7 - 11$ (h) $(-3.25) + 7.55 - 6.15$ (i) $4.85 - (-2.15)$
 (j) $9.37 - (-2.46)$ (k) $(-3.18) + (-0.77)$ (l) $(-4.06) - (-3.2)$

Exercise 3

1. Write down the answers to :-

- (a) 6×0.3 (b) 8×0.9 (c) 15×0.4 (d) 0.6×250
 (e) 60×0.5 (f) 0.9×90 (g) 0.9×600 (h) 7000×0.3 .

2. A tin of mixed fruit drops weighs 6.2 ounces.

What would the following weigh :-

- (a) 1000 tins (b) 40 tins
 (c) 700 tins (d) 3000 tins ?



3.



A bag of jell-beans costs £0.46.

What is the cost of :-

- (a) 8 bags (b) 70 bags
 (c) 400 bags (d) 5000 bags ?

4. Find :-

- (a) $6 \times (-0.8)$ (b) $8 \times (-0.8)$ (c) $0.6 \times (-3)$ (d) $0.7 \times (-8)$
 (e) $15 \times (-0.4)$ (f) $(-25) \times (-0.9)$ (g) $(-0.5) \times (-120)$ (h) $(-0.7) \times (-90)$.

Exercise 4

1. Calculate :-

- (a) $4.6 \div 2$ (b) $7.5 \div 5$ (c) $4.8 \div 8$ (d) $7.2 \div 9$
 (e) $18 \div 30$ (f) $42 \div 60$ (g) $64 \div 80$ (h) $45 \div 90$
 (i) $540 \div 600$ (j) $350 \div 500$ (k) $630 \div 900$ (l) $490 \div 700$
 (m) $1.1 \div 1000$ (n) $4.8 \div 3000$ (o) $9.5 \div 5000$ (p) $6.3 \div 7000$.

2. When 600 carpet tacks are weighed, their total weight is 138 grams.

What is the weight of 1 carpet tack ?

3. A hare ran 1.36 kilometres in 8 minutes.

How far had it travelled, on average, each minute ?



4. Find :-

- (a) $(-7.4) \div 2$ (b) $6.5 \div (-5)$ (c) $7.2 \div (-8)$ (d) $(-6.3) \div 9$
 (e) $28 \div (-40)$ (f) $72 \div (-90)$ (g) $(-54) \div 60$ (h) $(-2.8) \div (-700)$.

Exercise 5



1. Calculate :-

- | | | | |
|--------------------------------|--------------------------------|---------------------------------|----------------------------------|
| (a) 0.8×6 | (b) 0.8×60 | (c) 0.8×600 | (d) 0.8×6000 |
| (e) 0.8×0.6 | (f) 0.08×0.6 | (g) 0.008×0.6 | (h) 0.0008×0.6 |
| (i) $(0.7)^2$ | (j) 0.09×0.3 | (k) 0.03×0.3 | (l) 0.006×0.7 |
| (m) $0.08 \times 30\,000$ | (n) 400×0.0005 | (o) $0.3 \times 0.4 \times 0.5$ | (p) $20 \times 0.8 \times 0.6$ |
| (q) $60 \times 0.1 \times 700$ | (r) $0.8 \times 50 \times 0.8$ | (s) $0.7 \times 500 \times 0.3$ | (t) $0.6 \times 5000 \times 0.4$ |

2. Claire buys 400 bubble gums at £0.07 each. What does this cost her?



3. One evening last winter, 3 centimetres of snow fell every hour.

What depth of snow fell during the 15 minutes it was snowing?



4. Try these trickier examples :-

- | | | | |
|-------------------------|---------------------------|------------------------------|--------------------------|
| (a) 0.03×0.03 | (b) 0.06×0.07 | (c) 0.08×0.09 | (d) 0.05×0.04 |
| (e) $(-0.8) \times 0.7$ | (f) $0.02 \times (-0.04)$ | (g) $(-0.08) \times (-0.01)$ | (h) 0.009×0.003 |

Exercise 6



1. Find :-

- | | | | |
|-----------------------|------------------------|-------------------------|---------------------|
| (a) $6 \div 0.3$ | (b) $36 \div 0.9$ | (c) $100 \div 0.4$ | (d) $2.4 \div 0.8$ |
| (e) $4.55 \div 0.5$ | (f) $22.33 \div 0.7$ | (g) $6 \div 0.03$ | (h) $5.2 \div 0.04$ |
| (i) $0.54 \div 0.006$ | (j) $0.045 \div 0.009$ | (k) $0.0174 \div 0.003$ | (l) $12 \div 20$ |
| (m) $45 \div 500$ | (n) $56 \div 7000$ | (o) $720 \div 8000$ | (p) $350 \div 5000$ |

2. 3000 floppy disks can store 4710 megabytes.

How many megabytes can be stored on one such disk?



3. A small tub holds 0.08 litres of pineapple yogurt.

How many tubs can be filled from a container which contains :-

- | | | | |
|----------------|---------------|---------------|------------------|
| (a) 3.2 litres | (b) 16 litres | (c) 40 litres | (d) 0.64 litres? |
|----------------|---------------|---------------|------------------|



4. A box of 3000 Xmas cards weighs 4.2 kg, not including the weight of the box itself.

Work out the weight of one card, (a) in kg's. (b) in grams.

5. Have a go at these :-

- | | | | |
|----------------------|------------------------|---------------------------|-----------------------------|
| (a) $20 \div 0.0004$ | (b) $(-0.54) \div 0.3$ | (c) $(-0.72) \div (-0.8)$ | (d) $(-0.007) \div (-0.07)$ |
|----------------------|------------------------|---------------------------|-----------------------------|

Exercise 7



- Round these numbers to the number of decimal places shown in the brackets :-
 - 5.13 (1)
 - 7.851 (1)
 - 8.736 (2)
 - 6.3492 (2)
 - 4.8912 (3)
 - 3.2915 (3)
 - 47.999 24 (3)
 - 3.999 88 (3).
- Use your calculator to do the following and give your answer correct to 2 decimal places :-
 - $4.36 + 6.447$
 - 23.82×16.35
 - $37.1 \div 68.3$
 - $16 \div 7$.
- Do these calculations and round your answer to the number of decimal places shown in the brackets :-
 - 2.58×0.247 (3)
 - 0.394×6.555 (2)
 - 6.274×1.983 (3)
 - $0.58 \div 3.267$ (3)
 - $16.27 \div 19.443$ (1)
 - $0.7 \times 0.19 \times 0.87$ (4).
- Nine people share £14. How much does each receive ?
 - Share £27.98 amongst 3 people.
What is the maximum amount each person can receive ?

Exercise 8



- How many **significant figures** does each number have in the following context :-
 - There are **700** pennies in £7.
 - The cost of a soft toy is exactly £**7.50**.
 - There are **180°** in a half-turn.
 - The volume of a small bottle of juice is **200** ml, correct to the nearest 100 ml.
- How many significant figures are there in each of these numbers :-
 - 62.0
 - 3.00
 - 1.009
 - 40.7
 - 26.30
 - 0.741
 - 0.027
 - 0.000 90 ?
- Round each number to 1 significant figure :-
 - 53
 - 2679
 - 0.251
 - 0.000 815.
- Round each number to 2 significant figures :-
 - 308
 - 5229
 - 48.55
 - 0.003 281.
- Round each number to 3 significant figures :-
 - 9812
 - 72 091
 - 0.287 45
 - 0.019 999.



6. What is the total volume, (in ml), of 25 bottles of juice, each containing 675 ml ?
(Give your answer in millilitres to 3 significant figures)

7.



Harriet's restaurant bill came to £86.33 + VAT at 17.5%.
Calculate the VAT in £'s, correct to 4 sig. fig.

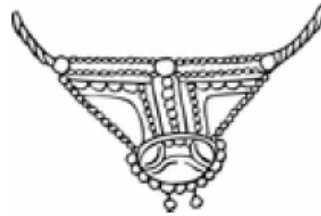
8. A jar of jam weighs 0.345 kg.
Round the weight to 2 sig. figs. and **estimate**
the total weight of 200 jars.



Exercise 9



1. Mrs Binnie bought a silver chain for £265.90
and a necklace for £85.75.
One year later she sold the chain for £305
and the necklace for £102.
How much of a profit did she make altogether ?



2.



A farmer bought a tractor priced at £15 840.
He took out a Hire Purchase agreement.

He paid a deposit of £790, and followed this by making
48 monthly payments of £358.10.

- (a) How much did it cost altogether for the tractor using H.P. ?
(b) How much more was this than the advertised price ?

3. Madge sells printer cartridges, earning an **annual** salary of
£13 837.20. Calculate Madge's weekly wage.



4. Jaki is a make-up consultant and is paid £12.48 per hour.
Last week she worked a total of 5 hours overtime at **time and a half**.

- (a) Calculate Jaki's overtime hourly rate of pay.
(b) Calculate how much she earned altogether for her 5 hours overtime.



5.



I returned with 50.05 euros from my holiday in Paris.
How many £'s will I receive for them with the exchange
rate at 1.54 euros to the £ ?

Revision Exercise



(NO calculator except in question 10)

- What is the number that is $\frac{7}{100}$ up from 3.26 ?
- Round these numbers to 1 decimal place :-
(a) 3.27 (b) 9.318 (c) 27.386 (d) 0.255 (e) 66.95.
- Charlie weighs 72.38 kilograms and Joseph weighs 69.98 kilograms.
(a) What is their combined weight ?
(b) By how much is Joseph lighter than Charlie ?
- Set down and find :-
(a) 6.8×9 (b) 25.7×8 (c) $5.32 \div 7$ (d) $25.62 \div 6$
(e) $15 \times (-0.6)$ (f) $(-25) \times (-0.8)$ (g) $(-0.3) \times (-120)$ (h) $(-0.4) \times (-90)$
(i) $450 \div 500$ (j) $56 \div 70$ (k) $7.5 \div 5000$ (l) $36 \div (-90)$.
- Mr Thom bought 3 salmon at the fish shop. Their total weight was 8.23 pounds.
If the large fish weighed 2.98 pounds and 3.47 pounds, find the weight of the smallest fish.
- Find :-
(a) $(-2.38) + 9.17 - 4.46$ (b) $(-1.08) - (-5.02)$.
- Calculate :-
(a) 0.7×9 (b) 0.4×80 (c) 0.07×0.4 (d) $0.6 \times 500 \times 0.4$
(e) $8 \div 0.4$ (f) $0.063 \div 0.009$ (g) $0.0192 \div 0.003$ (h) $180 \div 200$.
- Round these numbers to the number of decimal places shown in the brackets :-
(a) 7.29 (1) (b) 4.535 (2) (c) 6.2874 (3) (d) 57.998 54 (3).
- Round these numbers to the number of significant figures shown in the brackets :-
(a) 3210 (1) (b) 45830 (2) (c) 128.057 (3) (d) 0.0002471 (2).
- Jim is a florist and is paid a rate of £10.75 per hour. Last week he worked a total of 35 normal hours PLUS 6 hours overtime at time and a half.
(a) Calculate how much Jim earned for his 6 hours overtime.
(b) Calculate how much he earned altogether for his 6 hours overtime AND his 35 hours at £10.75.



Chapter 2

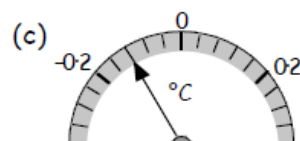
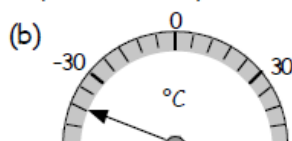
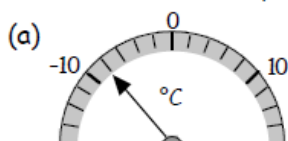


Calculators should **not** be used anywhere in this Chapter unless you are otherwise instructed.

Integers

Exercise 1

1. Write down the temperatures represented by the diagrams below :-

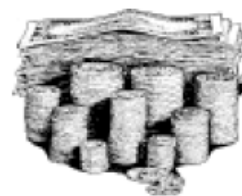


2. (a) Jack had £25 in his bank account and withdrew £40.

What did his balance show on the computer ?

- (b) Jill's bank balance showed (-£20).
Jill deposits £30 into her account.

What will her balance show now ?




- (c) Bill is overdrawn by £40 and puts £30 into his account.

What will his balance show now ?

- (d) Last week my balance was (-£60).
I cleared my overdraft and then signed a cheque for £35.
After I put some money into my account my balance read +£20.

How much had I put into my account **in total** since my (-£60) balance ?



3.  A Catfish swims 20 metres below the water.
A bird flies 30 metres directly above the fish.
How high above the water is the bird ?

4. Write down how old each person was when they died :-

- (a) Sillius Plonkus born 40 B.C. - died 25 A.D.
(b) Smellius Stinkus born 33 B.C. - died 32 A.D.
(c) Stupus Idious died 12 A.D. - was born 56 B.C.



5. Lazious Tyrus was born in 43 B.C.
 Activus Sporticus died at the age of 61 on Lazious' 23rd birthday.
- (a) What year was Activus born ?
- (b) Lazious died on what would have been Activus' 80th birthday.
 What year was this ?

Exercise 2

1. What temperature is :-
- (a) 5°C up from 10°C (b) 11°C up from -1°C (c) 12°C up from -4°C
- (d) 10°C down from 13°C (e) 20°C down from -10°C (f) 34°C up from -21°C ?
2. Complete the following, inserting "... $^{\circ}\text{C}$ up" or "... $^{\circ}\text{C}$ down" :-
- (a) 10°C is from 2°C (b) 8°C is from -1°C
- (c) 2°C is from 9°C (d) 23°C is from -7°C
- (e) -25°C is from 18°C (f) -82°C is from -26°C
3. (a) An ice making machine has its temperature set at -3°C .
 The door is left opened and the temperature rose by 5°C .
 What is the new temperature in the machine ?



(b)

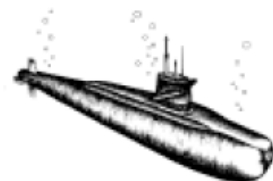


During a lab experiment a liquid's temperature is recorded at each stage of the experiment.

The temperature is raised by 8°C then dropped by 15°C then dropped by a further 4°C .

If the initial temperature was 3°C , what was the final temperature ?

4. At sea level, the hull of a submarine has a temperature of 5°C .
 For every 10 metres the submarine dives the temperature drops by 2°C .
 What would the hull temperature be after diving :-
- (a) 10 metres (b) 30 metres
- (c) 50 metres (d) 105 metres ?



Exercise 3

1. Write down the answers to each of the following :-

- | | | | |
|-------------------|-------------------|-----------------------------------|-----------------------------------|
| (a) $7 + 5$ | (b) $3 - 4$ | (c) $(-2) + 3$ | (d) $-1 + 4$ |
| (e) $(-5) + 7$ | (f) $(-11) + 5$ | (g) $3 + (-4)$ | (h) $7 + (-8)$ |
| (i) $15 + (-12)$ | (j) $11 + (-3)$ | (k) $(-14) + 7$ | (l) $(-1) + (-1)$ |
| (m) $3 - 5$ | (n) $4 - 9$ | (o) $(-3) - 6$ | (p) $(-12) - 5$ |
| (q) $(-10) - 3$ | (r) $(-7) - 7$ | (s) $(-3 \cdot 2) + 1 \cdot 6$ | (t) $5 \cdot 7 + (-8 \cdot 8)$ |
| (u) $(-3) + (-2)$ | (v) $(-4) + (-7)$ | (w) $(-3 \cdot 1) + (-6 \cdot 7)$ | (x) $(-7 \cdot 8) + (-6 \cdot 8)$ |

2. Find:-

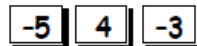
- | | | | |
|-----------------------|-----------------------|--------------------------|---|
| (a) $2 + 3 - 9$ | (b) $4 - 5 + 2$ | (c) $8 - 9 - 3$ | (d) $4 - 8 - 7$ |
| (e) $(-1) + 2 - 3$ | (f) $(-3) + (-1) + 4$ | (g) $(-5) - 6 + 4$ | (h) $(-7) + (-8) + 9$ |
| (i) $3 + (-4) + (-1)$ | (j) $7 + (-5) + (-3)$ | (k) $(-1) + (-2) + (-3)$ | (l) $(-3 \cdot 1) + 4 \cdot 2 + (-2 \cdot 7)$ |

3. In a special card game, each set of 3 cards is added together and the smallest total wins.

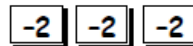
(a) Who wins the game shown ?



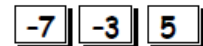
Bob



Bill



Ben



(b) By how much did the winner beat the third place ?

Exercise 4

1. Find :-

- | | | | |
|------------------|------------------|---------------------------------|---------------------------------|
| (a) $2 - (-3)$ | (b) $4 - (-5)$ | (c) $7 - (-7)$ | (d) $14 - (-8)$ |
| (e) $-1 - (-2)$ | (f) $-3 - (-7)$ | (g) $-5 - (-16)$ | (h) $-17 - (-18)$ |
| (i) $-3 - (-48)$ | (j) $-7 - (-25)$ | (k) $-1 \cdot 7 - (-2 \cdot 6)$ | (l) $-3 \cdot 8 - (-7 \cdot 7)$ |

2. Simplify :-

- | | | | |
|------------------|-------------------|------------------|--------------------------|
| (a) $6y - (-4y)$ | (b) $4w - (-3w)$ | (c) $7t + (-2t)$ | (d) $-6g + 5g$ |
| (e) $-p + (-p)$ | (f) $-8c + (-2c)$ | (g) $-h - (-2h)$ | (h) $42k + (-12k) - 13k$ |

3. Simplify :-

(a) $21 + 13 - 11$

(b) $-4 - 5 + 2$

(c) $-8 - (-9) - 3$

(d) $3j - 2j - j$

(e) $-4 + 4 - 4$

(f) $-5 + (-5) + 1$

(g) $-15 - 7 + (-24)$

(h) $-7x + (-3x) + 9x$

(i) $17 + (-12) - 5$

(j) $3e - (-e) + (5e)$

(k) $1.7 - (-3.4) + (-2)$

(l) $11h - (-5h) - (-6h)$

(m) $(-1) + (-1) + (-1) + (-1) + (-1) + (-1) + (-1)$

Exercise 5

1. Find :-

(a) $5(-3)$

(b) $4 \times (-4)$

(c) $(-7) \times 5$

(d) $(-5) \times 11$

(e) $15 \times (-3)$

(f) $1 \times (-1)$

(g) $(-8) \times 8$

(h) $10 \times (-10)$

(i) $(-15) \div 3$

(j) $(-28) \div 7$

(k) $(-72) \div 9$

(l) $(-169) \div 13$

(m) $10 \times (-15)$

(n) $(-1) \div 1$

(o) $(-99) \times 8$

(p) $(-1000) \div 1000$



2. Calculate :-

(a) $(3 \times 6) \div 9$

(b) $(12 \times 6) \div 8$

(c) $3 \times 4 \times (-2)$

(d) $(-5) \times 15 \div 25$

(e) $20 \times (-20) \div 40$

(f) $((-6) + 8) \times 3$

(g) $(4 - (-2)) \times 5$

(h) $((-7) - (-3)) \div 2$

3. Find :-

(a) $30 \div (-3)$

(b) $54 \div (-6)$

(c) $80 \div (-4)$

(d) $36 \div (-6)$

(e) $84 \div (-3)$

(f) $225 \div (-25)$

(g) $74 \div (-37)$

(h) $30 \div (-4)$

4. Calculate :-

(a) $(-3) \times (-4)$

(b) $(-5) \times (-5)$

(c) $(-7) \times (-2)$

(d) $(-7) \times (-12)$

(e) $(-15) \times (-4)$

(f) $(-8) \times (-12)$

(g) $(-50) \times (-20)$

(h) $(-100) \times (-30)$

(i) $(-6) \div (-2)$

(j) $(-9) \div (-3)$

(k) $(-16) \div (-4)$

(l) $(-1000) \div (-50)$

(m) $(-64) \div (-16)$

(n) $(-600) \div (-50)$

(o) $(-22) \div (-4)$

(p) $(-41) \div (-4)$

5. Find :-

(a) $(3 \times (-6)) \div 2$

(b) $((-3) \times (-4)) \div 6$

(c) $((-6) \times (-4)) \div 12$

(d) $((-4) + (-6)) \div 2$

(e) $(5 - (-5)) \times 4$

(f) $((-6) + (-6)) \div 4$

(g) $(-8) \times (4 - 6)$

(h) $((-3) - (-9)) \div (-2)$

(i) $(-3) \times (-4) \times (-5)$

(j) $6 \times (-2) \times (-4)$

(k) $8 \times (-2) \div (-1)$

(l) $(-2)^3$

(m) $(-4)^3$

(n) $(-2)^2 + (-1)^2$

(o) $(-5)^3 - (-3)^4$

(p) $(-2)^5 - (-2)^3$

Revision Exercise

1. (a) Isa has £42 in her bank account. She withdraws £60. What will her balance be ?
 (b) Billy has a balance of (-£44). He withdraws £28. How much is Billy now overdrawn ?
 (c) Carol has a balance of (-£123). She deposits £65.
 How much will she now have to deposit to clear her overdraft ?

2. (a) Jamus III was born in 12 B.C. and died in 33 A.D.
 How old was Jamus III when he died ?
 (b) Emperor Hirto-Sito died at the age of sixty seven in 45 A.D.
 What year was he born ?



3. The afternoon temperature on a mountain top is recorded at 4°C .
 The temperature drops by 16°C at night.
 What is the night-time temperature ?

4. A liquid is at a temperature of 25°C . Its freezing point is -18°C .
 How many degrees will the temperature have to drop to freeze the liquid ?

5. Find :-

- | | | | |
|---------------------|------------------------|--------------------------|-------------------------|
| (a) $4 + (-2)$ | (b) $6 + (-8)$ | (c) $11 + (-20)$ | (d) $-3 + (-2)$ |
| (e) $-1 + 7$ | (f) $-45 + (-33)$ | (g) $16 + (-19)$ | (h) $4 - (-2)$ |
| (i) $5 - (-11)$ | (j) $-6 - (-5)$ | (k) $3 \times (-2)$ | (l) $5 \times (-5)$ |
| (m) $(-8) \times 4$ | (n) $(-6) \times (-5)$ | (o) $(-12) \times (-10)$ | (p) $(-14) \div 2$ |
| (q) $(-36) \div 4$ | (r) $8 \div (-2)$ | (s) $(-60) \div (-12)$ | (t) $(-150) \div (-25)$ |

6. Calculate :-

- | | | |
|----------------------------|-----------------------------|----------------------------------|
| (a) $(12 + (-3)) \times 2$ | (b) $((-14) - (-6)) \div 2$ | (c) $8 \times (4 - (-5)) \div 3$ |
|----------------------------|-----------------------------|----------------------------------|

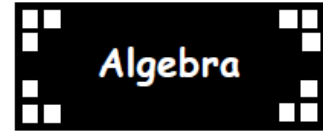
7. Simplify :-

- | | | |
|------------------------------|------------------------------|----------------------------------|
| (a) $4a + (-2a)$ | (b) $32g - (-12g)$ | (c) $-5z - (-5z)$ |
| (d) $6b + 2c + (-5b) - (-c)$ | (e) $7h + (-3k) - 2k - (-h)$ | (f) $x + (-1)^2 + (-x) + (-1)^7$ |

Chapter 11



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



Exercise 1

1. Simplify each of the following expressions :-

- | | | |
|--------------------------|---------------------------|----------------------------|
| (a) $y + y + y$ | (b) $3a + 4a - 5a$ | (c) $3e + 3e + 3e + 3e$ |
| (d) $4t + 7t + 5t - 11t$ | (e) $9p + 12p + p - 22p$ | (f) $9y + 4f + 2y + 5f$ |
| (g) $3r + 8s + 5r - 2s$ | (h) $12h + 8u - 9u - 11h$ | (i) $w + 4x - 3y + x + 5y$ |

2. Simplify by multiplying:-

- | | | |
|-------------------|------------------|------------------------------|
| (a) $5 \times y$ | (b) $4 \times e$ | (c) $h \times 7$ |
| (d) $g \times g$ | (e) $k \times k$ | (f) $2a \times 3a$ |
| (g) $5t \times t$ | (h) $6t$ | (i) $2p \times 3p \times 4p$ |

3. Find the value of each expression below when $a = 2$, $b = 3$ and $c = 4$:-

- | | | |
|-----------------------|-----------------------|-----------------------|
| (a) $a + b - c$ | (b) $a^2 - b^2$ | (c) $5b - 4c + a$ |
| (d) $a^2 + b^2 + c^2$ | (e) $a^2 - b^2 + c^2$ | (f) $a^3 - (b - c)^3$ |

4. Find the value of each expression below when $x = -1$, $y = 5$ and $z = -2$:-

- | | | |
|-----------------|--------------------|-----------------------|
| (a) $x + y + z$ | (b) $3x + 4y - 3z$ | (c) $x^2 + (y - z)^2$ |
|-----------------|--------------------|-----------------------|

Exercise 2

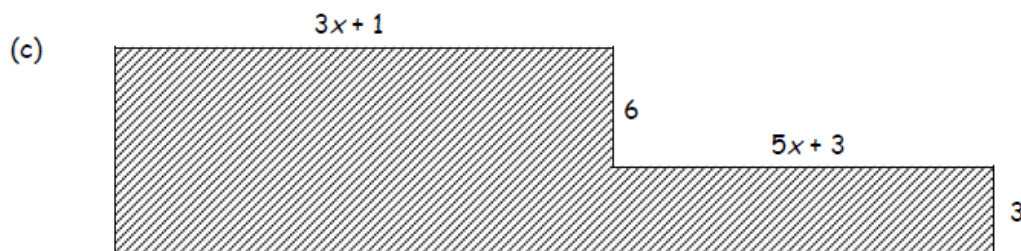
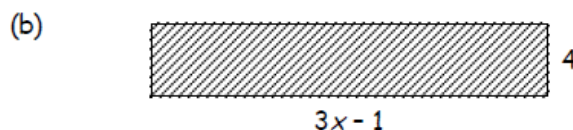
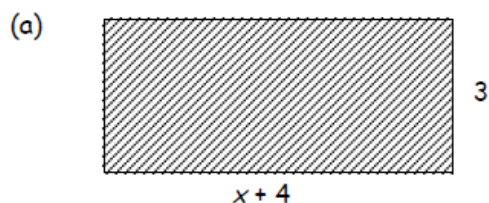
1. Multiply out the brackets :-

- | | | | |
|-----------------|-----------------|----------------------|--------------------------|
| (a) $3(x + 2)$ | (b) $4(t + 4)$ | (c) $5(a - 1)$ | (d) $10(w - 2)$ |
| (e) $2(2a + 1)$ | (f) $3(4e + 5)$ | (g) $7(2g - 1)$ | (h) $9(5k - 3)$ |
| (i) $3(2a + b)$ | (j) $5(x + 2y)$ | (k) $8(2h + 4g - 1)$ | (l) $15(v - 3w + y - 5)$ |

2. Remove these brackets :-

- | | | | |
|------------------|------------------|-------------------|-----------------------|
| (a) $-2(a + 3)$ | (b) $-5(6 + 2c)$ | (c) $-3(5 - 4g)$ | (d) $-(4a - 6)$ |
| (e) $x(x + 4)$ | (f) $t(2t - 5)$ | (g) $-p(5p + 2)$ | (h) $-k(-3 + 6k - m)$ |
| (i) $2y(3y + 1)$ | (j) $4x(3x - 7)$ | (k) $-2w(7 + 3w)$ | (l) $-4p(6p - 2 + k)$ |

3. Find the areas of each shape below :-



Exercise 3

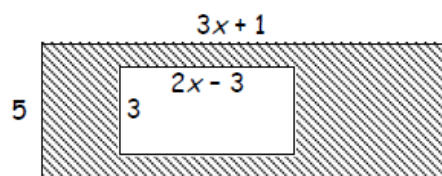
Multiply out the brackets and simplify :-

- (a) $2(x + 3) + 1$ (b) $3(y + 4) + 5$ (c) $7(k - 1) + 10$
 (d) $5(t - 2) - 5$ (e) $3(2g + 4) + 8$ (f) $6(3x + 1) - 6$
 (g) $8(3e - 2) + 5$ (h) $9(4h + 7) - 60$ (i) $4(w + 1) - 4w$.
- (a) $2(f + 3) + 3(f + 1)$ (b) $4(y + 2) + 7(y + 1)$ (c) $6(b + 3) + 2(b - 5)$
 (d) $5(2g + 2) + 4(g - 3)$ (e) $7(p + 3) - 5(p + 1)$ (f) $7(2q + 3) - 4(3q - 5)$
 (g) $5(3m - 2) + 3(2m - 6)$ (h) $4(3p - 4) - 3(4p - 5)$ (i) $5u(2u + 3) - 2u(u - 7)$.
- (a) $5 - 4(y + 2)$ (b) $12 - 3(2b + 4)$ (c) $6 - 3(2u - 2)$
 (d) $6m - 2(4 + 3m)$ (e) $3h - 5(2h - 1) + 6h$ (f) $r - (r - 1) + (-1)$.

4. A rectangular card has length $3x + 1$ centimetres and breadth 5 centimetres.

A smaller rectangle with sides 3 cm by $2x - 3$ cm is cut from the card.

Find in terms of x and y the area of card left (shaded area) in its simplest form.



Exercise 4

1. Find the value of each of the following when $a = 1$, $b = 2$, $c = 3$ and $d = 4$:-

- | | | | |
|----------------------|------------------------|------------------------|------------------------|
| (a) $2a$ | (b) $4c$ | (c) $2d + 1$ | (d) $a + b + c + d$ |
| (e) $2a + 3c$ | (f) $5b - 2d$ | (g) $3a + 2b + c - 2d$ | (h) $ab + cd$ |
| (i) $4ab + d - 2abc$ | (j) $(a + c)^2$ | (k) $a^2 + b^2 + c^2$ | (l) $(a + b - c)^2$ |
| (m) $(c - d)^3$ | (n) $\sqrt{c^2 + d^2}$ | (o) $2abc \div d$ | (p) $a + d(bc - ab)$. |

2. Find the value of each of the following when $e = -1$, $f = 3$, $g = -2$ and $h = 2$:-

- | | | | |
|----------------------------|-------------------|-----------------------------|-----------------------------|
| (a) $5e + f$ | (b) $3f + 2g - h$ | (c) $3e + 2f - 3g$ | (d) $ef + gh$ |
| (e) $2fg + e^3$ | (f) $(eh - gf)^2$ | (g) $e^2 - h^2 - g^2 + f^2$ | (h) $3(2e + f) + 2h^2$ |
| (i) $\frac{1}{2}(h + e)^2$ | (j) $2efgh$ | (k) $e^2(f^2 - h^2)$ | (l) $fg(3e - 5g) \div eh$. |

Exercise 5

1. Copy and factorise :-

- | | | |
|----------------------------------|-------------------------------------|---------------------------------------|
| (a) $3a + 6 = 3(\dots + \dots)$ | (b) $8g - 20 = 4(\dots - \dots)$ | (c) $10y + 25x = 5(\dots + \dots)$ |
| (d) $ab + 4a = a(\dots + \dots)$ | (e) $2kg + 2kp = 2k(\dots + \dots)$ | (f) $6b + 9b^2 = 3b(\dots + \dots)$. |

2. Factorise :-

- | | | | |
|-------------------|---------------------|----------------------|-------------------------|
| (a) $2a + 4$ | (b) $3x + 12$ | (c) $5k - 40$ | (d) $6p + 6q$ |
| (e) $12x + 15$ | (f) $16y + 24$ | (g) $24k - 15$ | (h) $9a + 21b$ |
| (i) $3x + 9y + 6$ | (j) $4d + 6e + 10f$ | (k) $12w + 30h - 18$ | (l) $15q - 45p + 75m$. |

3. Factorise fully :-

- | | | |
|----------------------|------------------|-----------------------|
| (a) $3ab + 21b$ | (b) $12cd + 15c$ | (c) $30pqr - 24pq$ |
| (d) $5x - 15xy + xz$ | (e) $x^2 + 4x$ | (f) $3y^2 + 6y$ |
| (g) $8x^2 + 4x$ | (h) $12y - y^2$ | (i) $x^2 + x$ |
| (j) $12x^2 + 4x$ | (k) $x^3 + x$ | (l) $y^3 + y^2 + y$. |

Revision Exercise



1. Simplify :-

- (a) $3x + 4x$ (b) $6x + 3x - 8x$ (c) $8 \times k$ (d) $2p \times 5$
 (e) $g \times 10$ (f) $3t \times t$ (g) $4p \times 3p$ (h) $2k \times 3k \times 4k$.

2. Multiply out each bracket :-

- (a) $3(x + 40)$ (b) $6(y - 3)$ (c) $9(2x + 4)$ (d) $12(3b - 5)$
 (e) $a(a + 1)$ (f) $3k(2k - 4)$ (g) $-3g(4 + 2g)$ (h) $-w(4 - 3w)$.

3. Multiply out each bracket and simplify :-

- (a) $3(x + 1) + 4$ (b) $4(2y + 5) - 15$ (c) $6 + 2(3e - 3)$
 (d) $13 - 4(3 - 2t)$ (e) $3x(x + 1) - 3x$ (f) $12y - 3y(2y - 4) + 3y^2$
 (g) $2(b + 3) + 3(2b - 1)$ (h) $5(2a + 6) - 2(4a + 15)$ (i) $5a(a + 3) - 2a(2a + 5)$.

4. Find the value of each expression when $a = -1$, $b = 2$, $c = 3$, $d = 4$ and $e = -2$:-

- (a) $b + c + e$ (b) $ab + cd$ (c) $2b + 3c - 4e$ (d) $abcde \div 4$
 (e) $a^2 + b^2 + c^2$ (f) $a^2 - b^2$ (g) $(ab + cd)^2 - e^2$ (h) $\sqrt{(ae)^2 - c}$.

5. Factorise fully :-

- (a) $3x + 6$ (b) $4y - 10$ (c) $14p - 21$ (d) $ab + ac$
 (e) $12xy + 4x$ (f) $15xyz - 3xy$ (g) $5m^2 + m$ (h) $16b^3 + 6b^2 + 28b$.