

# S3 National 4 Block Test 1 Revision Booklet



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# Rounding

## Exercise 1

### Decimal Places & Rounding



- Round each of the following to **one** decimal place :-
  - 8.63
  - 3.77
  - 9.051
  - 2.949
  - 11.123
  - 54.96
  - 0.0612
  - 99.97.
- Round each of the following to **two** decimal places :-
  - 1.768
  - 12.125
  - 7.706
  - 9.0052
  - 3.04399
  - 0.01517
  - 99.987
  - 99.999.
- Round each of these numbers to the number of decimal places in the brackets :-
  - 7.845 (2)
  - 3.1903 (1)
  - 51.542 (2)
  - 5.87654 (3).
- Share £8000 equally between 6 people.  
How much can each person get ?
  - Share one million pounds equally between 9 people.  
How much can each person get ?
  - How much will each person get if you share  $£10\frac{1}{4}$  million between 7 people ?
- Find three places in real life where rounding to decimal places is used.



# Answers

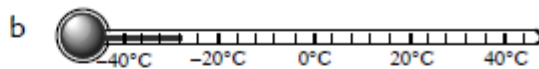
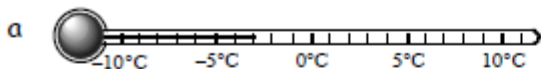
## Exercise 1 - Decimal Places

- |   |      |   |      |   |     |   |       |
|---|------|---|------|---|-----|---|-------|
| a | 8.6  | b | 3.8  | c | 9.1 | d | 2.9   |
| e | 11.1 | f | 55.0 | g | 0.1 | h | 100.0 |
- |   |      |   |       |   |       |   |        |
|---|------|---|-------|---|-------|---|--------|
| a | 1.77 | b | 12.13 | c | 7.71  | d | 9.01   |
| e | 3.04 | f | 0.02  | g | 99.99 | h | 100.00 |
- |   |      |   |     |   |       |   |       |
|---|------|---|-----|---|-------|---|-------|
| a | 7.85 | b | 3.2 | c | 51.54 | d | 5.877 |
|---|------|---|-----|---|-------|---|-------|
- |   |             |   |            |
|---|-------------|---|------------|
| a | £1333.33    | b | £111111.11 |
| c | £1464285.71 |   |            |
- Various

# Integers

## Exercise 9.3

1. Write down the temperature shown on each thermometer :-



2. a The temperature last night dropped from  $3^{\circ}\text{C}$  to  $-5^{\circ}\text{C}$ .

By how many degrees did the temperature drop ?

- b Two hours ago the temperature read  $-1^{\circ}\text{C}$ .

The temperature has risen by  $8^{\circ}\text{C}$ .

What is the new temperature ?



3. a My bank balance showed  $-\text{£}35$ . I withdrew  $\text{£}25$ . How much does my account now show ?

- b Ed's account shows  $(-\text{£}3550)$ . He deposits  $\text{£}1650$ . What does his account show now ?

4. Which integer is **halfway** between :-

a  $-12$  and  $14$

b  $-11$  and  $13$

c  $-111$  and  $113$ .

## Exercise 9.4

1. Write down the temperature that is :-

a  $8^{\circ}\text{C}$  down from  $2^{\circ}\text{C}$

b  $5^{\circ}\text{C}$  up from  $-3^{\circ}\text{C}$

c  $18^{\circ}\text{C}$  down from  $-11^{\circ}\text{C}$ .

2.  $4^{\circ}\text{C}$  is  $6^{\circ}\text{C}$  up from  $-2^{\circ}\text{C}$ . Copy and complete :-

a  $3^{\circ}\text{C}$  is ..... from  $-3^{\circ}\text{C}$

b  $5^{\circ}\text{C}$  is ..... from  $-1^{\circ}\text{C}$

c  $-11^{\circ}\text{C}$  is ..... from  $-20^{\circ}\text{C}$

d  $-23^{\circ}\text{C}$  is ..... from  $-57^{\circ}\text{C}$ .

3. A chemical freezing unit starts at  $-3^{\circ}\text{C}$  and drops  $8^{\circ}\text{C}$  every hour.

What is the temperature after :-

a 3 hours

b 5 hours

c 8.5 hours ?

# Integers

## Exercise 9.5

1. Find :-

a  $2 + (-1)$

d  $(-1) + 3$

g  $15 - 23$

j  $(-3) - 1$

m  $(-5) + (-5)$

p  $(-2) + 4 - 6$

b  $5 + (-4)$

e  $(-3) + 6$

h  $37 - 58$

k  $(-12) - 5$

n  $(-8) + (-3)$

q  $(-1) + 1 + (-1)$

c  $8 + (-3)$

f  $(-9) + 3$

i  $123 - 141$

l  $(-56) - 23$

o  $(-134) + (-156)$

r  $(-23) + (-12) - 17$ .

## Exercise 9.6

1. Copy and complete :-

$$\begin{aligned} \text{a } 4 - (-2) \\ &= 4 + 2 \\ &= \dots \end{aligned}$$

$$\begin{aligned} \text{b } -3 - (-2) \\ &= -3 + 2 \\ &= \dots \end{aligned}$$

2. Find :-

a  $3 - (-4)$

d  $(-2) - (-1)$

g  $(-23) - (-34)$

b  $5 - (-7)$

e  $(-6) - (-3)$

h  $(-123) - (-234)$

c  $12 - (-12)$

f  $(-11) - (-12)$

i  $(-100) - (-100) - 100$ .

3. Find :-

a  $(-1 \cdot 4) - (-2 \cdot 3)$

b  $(-5 \cdot 7) - (-6 \cdot 8)$ .

## Exercise 9.7

1. Find :-

a  $3 \times (-1)$

d  $(-6) \times 3$

g  $16 \div (-2)$

j  $(-60) \div 6$

m  $(-3) \times 2 \times 5$

b  $5 \times (-3)$

e  $(-5) \times 4$

h  $24 \div (-3)$

k  $(-124) \div 4$

n  $3 \times (-1) \times 2$

c  $8 \times (-8)$

f  $(-7) \times 4$

i  $45 \div (-5)$

l  $(-312) \div 3$

o  $6 \times 3 \times (-2)$ .

## Exercise 9.8

1. Find :-

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

d  $(-3) \times (-3)$

g  $(-12) \div (-4)$

j  $(-23) \times (-30)$

b  $(-5) \times (-3)$

e  $(-7) \times (-6)$

h  $(-15) \div (-5)$

k  $(-250) \div (-50)$

c  $(-8) \times (-1)$

f  $(-9) \times (-9)$

i  $(-100) \div (-20)$

l  $(-12) \times (-3) \div 4$ .

# Answers

## Exercise 9.3

1. a  $-3^{\circ}\text{C}$       b  $-28^{\circ}\text{C}$   
2. a  $8^{\circ}\text{C}$       b  $7^{\circ}\text{C}$   
3. a  $-\text{£}60$       b  $-\text{£}1900$   
4. a 1      b 1      c 1

## Exercise 9.4

1. a  $-6^{\circ}\text{C}$       b  $2^{\circ}\text{C}$       c  $-29^{\circ}\text{C}$   
2. a  $6^{\circ}\text{C}$  up      b  $6^{\circ}\text{C}$  down      c  $9^{\circ}\text{C}$  up      d  $34^{\circ}\text{C}$  down  
3. a  $-27^{\circ}\text{C}$       b  $-43^{\circ}\text{C}$       c  $-71^{\circ}\text{C}$

## Exercise 9.5

1. a 1      b 1      c 5      d 2  
    e 3      f  $-6$       g  $-8$       h  $-21$   
    i  $-18$       j  $-4$       k  $-17$       l  $-79$   
    m  $-10$       n  $-11$       o  $-290$       p  $-4$   
    q  $-1$       r  $-52$

## Exercise 9.6

1. a 6      b  $-1$   
2. a 7      b 12      c 24      d  $-1$   
    e  $-3$       f 1      g 11      h 111  
    i  $-100$   
3. a  $0.9$       b  $1.1$

## Exercise 9.7

1. a  $-3$       b  $-15$       c  $-64$       d  $-18$   
    e  $-20$       f  $-28$       g  $-8$       h  $-8$   
    i  $-9$       j  $-10$       k  $-31$       l  $-104$   
    m  $-30$       n  $-6$       o  $-36$

## Exercise 9.8

1. a 6      b 15      c 8      d 9  
    e 42      f 81      g 3      h 3  
    i 5      j 690      k 5      l 9

# Algebra

## Exercise 2

### Breaking Brackets

1. Multiply out each bracket :-

a  $3(x + 4)$

b  $7(y - 3)$

c  $5(2k + 5)$

d  $11(6y - 7)$

e  $y(y + 2)$

f  $k(k - 3)$

g  $u(3u + 4)$

h  $3r(3r - 4)$

i  $-3(g + 5)$

j  $-4(2t + 6)$

k  $-5(j - 2)$

l  $-2(3f - 8)$

m  $-y(y + 7)$

n  $-h(h - 3)$

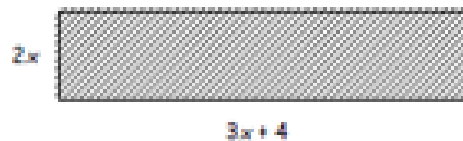
o  $-2w(2w + 1)$

p  $-5k(3 - 4k)$

2. Write down the area and perimeter of this rectangle :-

a using brackets

b without brackets.



## Exercise 3

### Breaking Brackets and Simplifying

1. Multiply out the brackets and simplify fully where necessary :-

a  $5(k + 2) + 3$

b  $8(2y + 4) - 12$

c  $7(3e - 2) + 11$

d  $8 + 2(t + 3)$

e  $11 - 3(3 + w)$

f  $15 - (g + 15)$

g  $3(w - 1) + 2(w + 1)$

h  $4(2y - 3) + 5(4y + 3)$

i  $2(4r + 3) - 6$

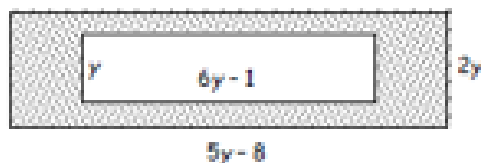
j  $3w - (w + 4) + 2(2 - w)$

k  $4(3y + 4) - 2(5y - 1) - 18$

l  $3p + 2(4p - 6) - (9p + 12)$

m  $5(3 - 2m) + 3(2m - 6) - 4(1 - 8m) + 2m + 7$

2. Calculate the shaded area of the rectangle shown, in terms of  $y$ .





# Algebra

## Exercise 1

### Solving Equations



1. Copy each equation and solve to find the value of  $x$  :-

a  $x + 6 = 11$

b  $x + 1 = 23$

c  $x + 7 = 6$

d  $x + 14 = 14$

e  $x - 7 = 8$

f  $x - 3 = 2$

g  $13 + x = 17$

h  $9 + x = 7$

i  $17 - x = -17$ .

2. Copy each equation and solve to find the value of the letter :-

a  $4x = 12$

b  $5p = 35$

c  $6k = 24$

d  $3h = 33$

e  $4g = 56$

f  $7n = 0$

g  $4m = 144$

h  $6c = 9$

i  $8d = 1$ .

3. Find the value of  $x$  in the following equations (*Set down ALL your working*).

a  $2x + 6 = 14$

b  $5x + 4 = 29$

c  $4x + 7 = 39$

d  $3x + 1 = 31$

e  $4x - 8 = 16$

f  $7x - 11 = 3$

g  $10x - 9 = 41$

h  $3x - 6 = 0$

i  $11x - 7 = 37$

j  $6x - 3 = 12$

k  $8x + 12 = 15$

l  $9x + 1 = 43$ .

## Exercise 2

### Harder Equations



1. Copy and complete :-

*\*(You may have been shown a different method)*

a  $8x + 1 = 6x + 17$   
 $\Rightarrow 2x + 1 = \dots$   
 $\Rightarrow 2x = \dots$   
 $\Rightarrow x = \dots$

b  $7x - 3 = x + 15$   
 $\Rightarrow 7x - \dots = \dots$   
 $\Rightarrow 7x = \dots$   
 $\Rightarrow x = \dots$

2. Solve these equations :-

a  $5x + 4 = 2x + 19$

b  $3x + 7 = x + 11$

c  $8x + 6 = 7x + 22$

d  $4x - 5 = x + 16$

e  $11x - 1 = 2x + 17$

f  $6x - 4 = 4x + 23$ .

3. These equations are a little "different". Solve :-

a  $5x = 4x + 3$

b  $3x = x + 44$

c  $7x = 4x + 42$

d  $12x = 8x + 1$

e  $15x = 3x + 18$

f  $6x - 2 = 8x$ .

4. Joe bought 5 bags of marbles. Harry bought 3 bags, but he already had 20 loose marbles. They then had exactly the same number of marbles.



a Make up an equation to show this information.

b Solve the equation to determine how many marbles there are in a bag.

# Solutions

## Exercise 2 - Breaking Brackets

1. a  $3x + 12$                       b  $7y - 21$   
c  $10k + 25$                       d  $66y - 77$   
e  $y^2 + 2y$                         f  $k^2 - 3k$   
g  $3u^2 + 12u$                     h  $9r^2 - 12r$   
i  $-3q - 15$                         j  $-8t - 24$   
k  $-5j + 10$                         l  $-6f + 16$   
m  $-y^2 - 7y$                        n  $-h^2 + 3h$   
o  $-4w^2 - 2w$                     p  $-15k + 20k^2$

2. a  $A = 2x(3x + 4)$             b  $A = 6x^2 + 8x$

## Exercise 3 - Breaking Brackets & Simplifying

1. a  $5k + 13$     b  $16y + 20$     c  $21e - 3$   
d  $2t + 14$     e  $2 - 3w$     f  $-g$   
g  $5w - 1$     h  $28y + 3$     i  $8r$   
j  $0$             k  $2y$   
l  $2p - 24$     m  $30m$
2.  $A = 2y(5y - 8) - y(6y - 1) = 10y^2 - 16y - 6y^2 + y$   
 $A = 4y^2 - 15y$

# Solutions

## Ch 5 Ex 1 Solving Equations

1.	a	5	b	22	c	-1
	d	0	e	15	f	5
	g	4	h	-2	i	34
2.	e	3	b	7	c	4
	d	11	e	14	f	0
	g	36	h	$\frac{3}{2}$	i	$\frac{1}{8}$
3.	e	4	b	5	c	8
	d	10	e	6	f	2
	g	5	h	2	i	4
	j	$\frac{16}{6} = 2\frac{2}{3}$	k	$\frac{3}{8}$		
	l	$\frac{42}{9} = \frac{14}{3} = 4\frac{2}{3}$				

## Ch 5 Ex 2 Harder Equations

1.	a	8	b	3		
2.	a	5	b	2	c	16
	d	7	e	2	f	$\frac{27}{2}$
3.	a	3	b	22	c	14
	d	$\frac{1}{4}$	e	$\frac{18}{12} = 1\frac{1}{2}$	f	-1
4.	a	$5x = 3x + 20$	b	10		

# Wages

## Exercise 1



1. Tara works in a clothes shop and gets a basic pay of £9.50 per hour.  
If she worked 36 hours last week, how much was she paid ?

2. Samantha works as a photographer.  
Her hourly rate of pay is £14.60.  
She worked for 40 hours last week.  
How much did she earn ?



3. Simone works as a carer at £18.72 per hour.  
She worked hard last week for 48 hours.  
What was her basic pay for the week ?



4. Janet works for an architect and her friend Pete is a plumber.  
Janet earns £12.70 per hour, whereas Pete is paid £10.90 per hour.  
Last week, Janet worked 30 hours and Pete 34 hours.

- a Calculate Janet's pay and Pete's pay for the week.  
b How much **LESS** did Janet earn than Pete ?



5. Billy logged the number of hours he worked in February.  
Week 1 - 37 hours, Week 2 - 34 hours, Week 3 - 39 hours, Week 4 - 41 hours.  
If Billy's rate of pay is £11.50 per hour, how much did he earn in February ?

## Exercise 2



1. Frank's payslip last week showed he earned £633.84.  
He knew he had worked for 38 hours.  
Calculate Frank's hourly rate.

2. Darren is a nurse and earned £450 last week.  
He worked for 40 hours.  
What is Darren's hourly rate of pay ?



# Wages

3. Dan works as a cook in a pancake parlour.  
He earned £728.20 last week for his 44 hours.
- Calculate his hourly rate of pay.
  - This week he only worked for 30 hours.  
How much pay is he due this week?



4. During the month of May, Sam worked 36 hours the 1st week, 42 hours the 2nd week, 40 hours the 3rd week and 48 hours the 4th week.
- How many hours did Sam work altogether in May?
  - If his total wage for the month was £2177.92, calculate Sam's hourly rate of pay.

5.




- Roger is a dog walker.  
His hourly rate is £8.85.  
He earns £407.10 every week.  
How many hours does he work in a week?

## Exercise 3



1. Sally's monthly pay at *The Paint Store* is £984.  
Calculate her annual (yearly) pay.



2.  Clarke is a surgeon at a privately owned hospital.  
He is paid £7250 per month.  
Calculate Clarke's annual pay.

3. Samil has a part-time job as a paper boy. He is paid £38.50 per week.  
Calculate Samil's pay for a year.

4.



- Jack works 54 hours per week as a janitor.  
His rate of pay is £14.60 per hour.
- Calculate Jack's weekly pay.
  - Calculate his annual pay.

5. Shona and her sister Lorna are both fashion designers.  
Shona is paid monthly and earns £1980.50 per month.  
Lorna is paid weekly and gets £495.25 per week.  
Whose annual pay is greater, and by how much?



# Wages

6. Buzz earns £25 800 per year as a driver.

Calculate his monthly salary.

7. Les works for a magazine and earns £11 868 annually.

Calculate his monthly pay.



8. Harry works as a part time paramedic.

He is paid £8 216 per year.

Calculate Harry's weekly wage.



9. William is a hospital technician and earns a fixed salary of £24 752 per year.

Calculate William's weekly wage.

10. Gio is offered a job as an assistant butcher.

His salary is £12 480 per year.

He can choose to be paid weekly or monthly.

- How much would his monthly salary be ?
- Calculate how much he would earn weekly if this was his chosen method of payment.



11. Jen works a 40 hour week as a tennis coach.

Her annual salary is £23 920.

- Calculate her weekly pay.
- Calculate Jen's hourly rate of pay.



## Exercise 4



1. Ben earned £18 400 last year as an apprentice draughtsman.

This year he was given a 4% pay rise.

Calculate his new annual salary.



2. Jaycee is a part-time chef at "Larry's Pizza Joint" and earns £7 800 per year.

Larry awards her a pay increase of 5%.


Calculate her new annual salary.





# Wages

3. Ernest earns £27 000 per year and Trad earns £25 000 per year.  
Ernest gets a 4% pay rise and Trad a 5% rise.  
Who gets the bigger rise in money terms?

4.  Alan is a chemist and his hourly rate of pay is £25.50.  
He normally works 38 hours per week.
- Calculate Alan's weekly wage.
  - If he gets an 8% pay rise, what will his new weekly pay be?

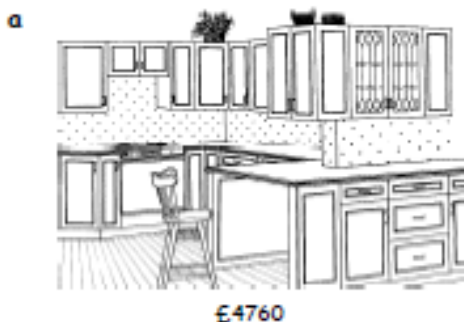
5. James's hourly rate of pay is £17.80. He receives a 10% pay rise.
- Calculate James's new hourly rate of pay.
  - If James works 35 hours per week, calculate :-
    - what his OLD weekly pay would have been.
    - what his NEW weekly pay will be.
    - how much of a rise this is in his weekly pay.




## Exercise 5



1. In "The Kitchen Store", commission is paid at 4% of sales.  
Calculate the commission due by selling these two kitchens.



2.  Tom works as a door-to-door salesman for "Shoe Shine", selling brushes. Shoe Shine pays 12% commission.  
How much commission is Tom due this week if he sells goods to the value of :-
- £1750
  - £40 000?

# Wages

3. Jackie is an agent for *CarMagsales* advertising space. She has a monthly pay of £1050. She also gets 5% commission on all sales she makes. In April, she sold £9 650 worth of advertising space.
- Calculate her commission for April.
  - Calculate her total pay for April.




4. Razz is a plumber working on a new housing estate. He is paid £550.50 per week and gets a bonus of £45 for every bath he installs in a new house. In a normal week he manages to put in 15 baths.
- Calculate Razz's bonus for installing these baths.
  - Calculate Razz's total pay for a week.



- 5.
- |           |    |
|-----------|----|
| Maths     | 82 |
| English   | 58 |
| Physics   | 71 |
| Geography | 67 |
| Chemistry | 90 |
| Music     | 48 |
| French    | 56 |
- Jake is about to sit his 3rd Year set of exams. His mother promised him £20 for each result over 70%, £10 for each score between 60% and 69% and £5 for any exam result between 50% and 59%. Jake scored the % marks shown opposite. How much did Jake's mother pay him ?

6. Cally works for *Bestware Goods*, selling kitchen appliances. She earns 15% commission, but **not** on all her sales. Only on weekly sales over £120. What is Cally's commission if she :-
- has no sales at all ?
  - has £110 worth of sales ?
  - has £800 worth of sales (not 15% of 800) ?



- 7.
- 
- Teira works for *Babylon Baby Products*. She earns 5% commission on all her weekly sales over £1500. Calculate Teira's commission in a week when she sells £4500 worth of products.



# Wages

## Exercise 6



1. Jackson is a barman who gets a basic rate of £11.20 per hour.

On Wednesday night, he worked 5 hours overtime, for which he was paid at **double time**.

- Calculate Jackson's overtime hourly rate.
- How much did Jackson earn in overtime pay?



2. Fran is a secretary who worked 9 hours overtime (**double time**) last week.

Fran's normal rate of pay is £9 per hour.

- Calculate Fran's overtime hourly rate of pay.
- Calculate how much her overtime works out at.



3. Maureen is a cleansing manager, getting paid £23.50 per hour.

Last week she put in 5 hours overtime (**double time**).

- Calculate Maureen's overtime hourly rate of pay.
- Calculate how much Maureen earned for her overtime work.

4. Rhianna works in *Pet Stores*. She is paid a rate of £13.20 per hour.

On Sunday, she worked 8 hours overtime at **time and a half**.

- Calculate Rhianna's overtime rate of pay.
- Calculate how much she earned for her 8 hours overtime.
- She also got a £45 **bonus** for her overtime.  
How much had she earned altogether for her overtime?



5. Joseph, who is a trainee chef, has a basic rate of pay of £10.20 per hour.

Last week, he worked his "normal" basic 50 hours.

He also worked 8 hours overtime at **time and a half**.

**COPY** this payslip for Joseph and complete it.

Joseph Lumley		Payroll Number 00258	Date w/e 07/06/13
Basic Rate = £10.20		Overtime Rate = $(1.5 \times £10.20) =$	£ <input type="text"/>
Basic Pay	=	50 x £10.20 =	<input type="text"/>
Overtime Pay	=	8 x £..... =	£ <input type="text"/>
Total Pay		=	£ <input type="text"/>


# Wages

## Exercise 7




1. Calculate the Net (take home pay) for each of the following :-

	Gross Pay	Deduction
a Tom	£1840/month	£471
b Dan	£1981/month	£682
c Jen	£15740/year	£2980
d Tim	£1109.95/month	£311.55
e Kara	£54320/year	£11485

2.  Jed starts work as a technician at a salary of £16450 per year. He calculated that his total deductions should come to £2974.
- Calculate Jed's NET pay for the year.
  - Calculate his net MONTHLY pay.

3. Greg works in the stock exchange and earns £2780.70 per month. His total deductions come to £835.95. Calculate Greg's net pay for the month.



4.  Ellie earns £14.85 per hour as a bank teller. This week, she worked a total of 46 hours.
- Calculate Ellie's gross pay for the week.
  - If her deductions came to £89.49, calculate her net pay for the week.

5. For the payslip below, calculate :-
- the Gross Pay
  - the Total Deductions
  - the Net Pay.

HOWARD ELECTRICS								
Name :- Jed Baker		Works No. :- 25741		Week No :- 26				
Income	Basic -	613.63	O/time -	£78.42	Bonus -	—	Total -	£ ?
Deducts	I.T. -	£109.85	Superan -	£37.54	Nat Ins -	£55.20	Total -	£ ?
Net Pay							£ ?	

# Solutions

## Answers to Chapter 25

### Exercise 1

1. £342
2. £584
3. £418.66
4. a Janet £381 Pete £370.60      b £10.40
5. £1736.60

### Exercise 2

1. £16.68
2. £11.26
3. a £16.66      b £496.60
4. a 166      b £13.12
5. 46

### Exercise 3

1. £11808
2. £87000
3. £2002
4. a £788.40      b £40996.80
5. Lorna earns £1987 a year more
6. £2160
7. £989
8. £168
9. £476
10. a £1040      b £240
11. a £460      b £11.60

### Exercise 4

1. £19136
2. £8190
3. Trad £1260 rise - Ernest only £1080
4. a £969      b £1046.62
5. a £19.68  
b (i) £623      (ii) £686.30      (iii) £62.30

### Exercise 5

1. a £190.40      b £619.20
2. a £210      b £4800
3. a £482.60      b £1632.60
4. a £676      b £1226.60
5. £80
6. a £0      b £0      c £102
7. £160

### Exercise 6

1. a £22.40      b £112
2. a £18      b £162

3. a £47      b £236
4. a £19.80      b £168.40      c £203.40
5. Total pay - £632.40

### Exercise 7

1. a £1369      b £1299      c £12760  
d £798.40      e £42836
2. a £13476      b £1123
3. £1944.76
4. a £683.10      b £693.61
5. a £692.06      b £202.69      c £489.46

### Revision Exercise

1. a £764.66      b £18.21      c £26267.36  
d £1764      e £16367.62  
f £726
2. Gina paid more by £3807.02 a year
3. £21820
4. £228
5. a £280.80      b £140.40
6. £2216
7. Inc = £1407, Ded = £346.89      Net = £1060.11

# Insurance- No Solutions

## Exercise 4



(Use the set of insurance rates shown opposite).

1. Tommy and Rhona's flat is worth £98000.  
How much would it cost each year to insure it with Coverall ?
2. John and Alicia's bungalow is valued at £165 000.  
How much would it cost each year to insure it with Coverall ?
3. Brian tallied up the value of the contents of his house and it came to a total of £8000. How much will it cost each year to insure the contents for that value from Coverall ?
4. Malcolm and Lucille are moving abroad for 2 years. They sell their flat and put their furniture, valued at £16 000 into storage. How much will it cost them to insure their furniture with Coverall each year ?
5. Ted and Norma live in a detached villa valued at £180000.  
The entire contents of their house are to be insured for a value of £40000.
  - a How much will it cost each year to insure their house with Coverall ?
  - b How much will it cost each year to insure the contents ?
  - c They pay the TOTAL insurance premium in 12 monthly payments to Coverall.  
How much will they pay each month for their insurance ?

### COVERALL Insurance Company

#### Annual Premium Rates

Building - £3.85 per £1000

Content - £5.75 per £1000



# Insurance- No Solutions

## Exercise 5



1.
  - a How much would it cost each month for James, aged 26 and a non-smoker, to insure his life for £1000 with Bingly & Bottomly (see table) ?
  - b James insures his life for £30 000.  
Calculate his monthly premium.

### BINGLY AND BOTTOMLY Whole Life (with profits)

Age		Non-smoker	Smoker
Male	Female		
16-24	16-31	£2-10	£3-30
25	32	£2-90	£3-35
26	33	£2-95	£3-45
27	34	£2-95	£3-55
28	35	£3-00	£3-70
29	36	£3-05	£3-80
30	37	£3-10	£3-90
31	38	£3-20	£4-00

MONTHLY PREMIUMS FOR EVERY £1000 INSURED

2. Deborah is 30 years of age.  
She wants to take out insurance for £50 000.  
Calculate her monthly premium if she is a **non-smoker**.
3. Calculate the monthly premiums due for **Whole Life Policies** by the following people :-
  - a Arthur, a smoker, is aged 29. He insures his life for £20 000.
  - b Tanya, a smoker, is aged 37. She insures her life for £40 000.
  - c Nadine, a non-smoker, is aged 17. She insures her life for £15 000.
  - d Brian, a non-smoker, is aged 24. He insures his life for £35 000.

# Insurance- No Solutions

## Exercise 5



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  - a How much would it cost each month for James, aged 26 and a non-smoker, to insure his life for £1000 with Bingly & Bottomly (see table) ?
  - b James insures his life for £30 000.  
Calculate his monthly premium.

### BINGLY AND BOTTOMLY Whole Life (with profits)

Age		Non-smoker	Smoker
Male	Female		
16-24	16-31	£2-10	£3-30
25	32	£2-90	£3-35
26	33	£2-95	£3-45
27	34	£2-95	£3-55
28	35	£3-00	£3-70
29	36	£3-05	£3-80
30	37	£3-10	£3-90
31	38	£3-20	£4-00

MONTHLY PREMIUMS FOR EVERY £1000 INSURED

2. Deborah is 30 years of age.  
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  - c Nadine, a non-smoker, is aged 17. She insures her life for £15 000.
  - d Brian, a non-smoker, is aged 24. He insures his life for £35 000.



# Decimals

3. Copy and complete :-

$$\begin{array}{r} (a) \quad 47.5 \\ + 35.2 \\ \hline \end{array}$$

$$\begin{array}{r} (b) \quad 8.17 \\ + 5.96 \\ \hline \end{array}$$

$$\begin{array}{r} (c) \quad 1.38 \\ - 1.17 \\ \hline \end{array}$$

$$\begin{array}{r} (d) \quad 19.38 \\ - 9.89 \\ \hline \end{array}$$

$$(e) \quad 22.4 + 9.9$$

$$(f) \quad 4 - 2.3$$

$$(g) \quad 11.7 - 3.45$$

$$(h) \quad 5.8 - 4.92$$

4. A scientist puts 3.9 ml of hydrochloric acid, 4.56 ml of acerbic acid and 9.65 ml of citric acid into a test tube.

- (a) What is the total amount of acid in the test tube ?
- (b) How much more citric than hydrochloric acid is there ?

5. Perimeter is the total distance around the outside of a shape.  
A rectangle has length 12.32 cm and perimeter of 30.8 cm.  
Find the width of the rectangle (show all your working).



# Solutions

3. a 82.7      b 14.13      c 0.11      d 9.49  
e 32.3      f 1.7      g 8.25      h 0.88

4. a 18.11 ml      b 5.75 ml

5. 3.08 cm



# More Decimals

## Exercise 7

1. Write down the answers to the following :-

$$\begin{array}{r} (a) \quad 4.34 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} (b) \quad 8.27 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} (c) \quad 8.78 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} (d) \quad 119.38 \\ \times 9 \\ \hline \end{array}$$

$$(e) \quad 5.7 \times 8$$

$$(f) \quad 42.3 \times 4$$

$$(g) \quad 135.9 \times 5$$

$$(h) \quad 7 \times 37.521$$

2. Show all your working to the following questions :-

(a) Fred the monkey eats 3.74 kg of food every day.

What is the weight of food Fred will eat in :-

- (i) 3 days      (ii) a week ?



(b) Boris the zookeeper gets paid £7.84 an hour.

How much will Boris earn in :-

- (i) 4 hours      (ii) 9 hours ?

(c) Kevin the Camel eats six 3.71 kg boxes of dates every month.  
Karen the Camel eats five 4.09 kg boxes.

Who eats the most and by how much ?



## Exercise 8

1. Copy and complete the following :-

$$(a) \quad \underline{2} \overline{)37.16}$$

$$(b) \quad \underline{6} \overline{)91.44}$$

$$(c) \quad \underline{7} \overline{)41.79}$$

$$(d) \quad \underline{8} \overline{)129.12}$$

2. Find :-

$$(a) \quad 35.7 \div 7$$

$$(b) \quad 57.06 \div 6$$

$$(c) \quad 0.072 \div 8$$

3. Show all your working for the following questions :-

(a) Nine bricks have a total length of 2.61 metres long.

What is the length of 1 brick ?

(b) Three kegs of beer hold 3071.6 litres.

How much beer does one keg hold ?

(c) Find :-

(i) a third of 20.8

(ii) a ninth of 51.66

(iii) a sixth of 6.06

(iv) a fifth of 0.7



4. Two shops sell identical shirts.

Shop A sells three shirts for £8.79.

Shop B sells five shirts for £14.75.

Which shop has the best deal ? Explain.



# Solutions

## Chapter 2 Exercise 7

1. a 17.36      b 57.89      c 52.68      d 1074.42  
e 45.6      f 169.2      g 679.5      h 262.647
2. a (i) 11.22 kg      (ii) 26.18 kg  
b (i) £31.36      (ii) £70.56  
c Kevin by 1.81 kg

## Chapter 2 Exercise 8

1. a 18.58      b 15.24      c 5.97      d 16.14
2. a 5.1      b 9.51      c 0.009
3. a 0.29 m      b 1024.2 l  
c (i) 6.6      (ii) 5.74      (iii) 1.01      (iv) 0.14
4. shop A each shirt 2p cheaper

# Fractions, Percentages, Decimals

## Exercise 2

1. Find :-

(a)  $\frac{1}{2}$  of 46

(b)  $\frac{1}{3}$  of 39

(c)  $\frac{1}{4}$  of 64

(d)  $\frac{1}{7}$  of 63

(e)  $\frac{1}{12}$  of 84

(f)  $\frac{1}{15}$  of 165

(g)  $\frac{1}{20}$  of 880

(h)  $\frac{1}{75}$  of 975

2. Find :-

(a)  $\frac{3}{4}$  of 36

(b)  $\frac{2}{3}$  of 24

(c)  $\frac{3}{7}$  of 21

(d)  $\frac{4}{5}$  of 35

(e)  $\frac{9}{10}$  of 210

(f)  $\frac{5}{12}$  of 144

(g)  $\frac{7}{8}$  of 648

(h)  $\frac{11}{13}$  of 143

3. There are 240 first year pupils at Gracetown High School.  $\frac{3}{8}$  of them are boys.

(a) How many boys are there ?

(b) How many girls are there ?



4. Two thirds of the days in June were sunny days.

How many days were sunny ?



5. A computer predicted that in February 2007 two sevenths of the month would have snow falling.

How many day would not have snow falling ?



## Exercise 3

1. Write each of the following as a fraction and as a decimal :-

(a) 41%

(b) 93%

(c) 7%

(d) 23%

(e) 99%

(f) 11.5%

(g) 1.5%

(h) 8.25%

2. Write these percentages as fractions and simplify :-

(a) 20%

(b) 45%

(c) 15%

(d) 75%

(e) 5%

(f) 35%

(g)  $66\frac{2}{3}\%$

(h) 12.5%

# Fractions, Percentages, Decimals

3. Use a calculator where necessary and change each fraction to a percentage :-

(a)  $\frac{8}{25}$

(b)  $\frac{12}{40}$

(c)  $\frac{5}{8}$

(d)  $\frac{11}{80}$



4. Andrew sat a Maths test which comprised of twenty questions each worth two marks.

Andrew scored 32 marks. Write his test score as a percentage.

5. Patel scored  $\frac{32}{50}$  for French,  $\frac{45}{72}$  for Music,  $\frac{18}{25}$  for English and  $\frac{22}{30}$  for Maths.

List Patel's subjects in order from best to worst.

## Exercise 4



1. Calculate :-

(a) 20% of £60

(b) 40% of 250 kg

(c) 60% of £150

(d) 15% of 120 g

(e) 8% of £66

(f) 38% of 500 cm

(g) 12% of £80

(h)  $12\frac{1}{2}\%$  of 240 €

(i)  $\frac{1}{2}\%$  of £8

2. Eighty percent of the 560 videos in a shop are rated 15.

How many videos are rated 15 ?



3. On holiday, Calvin spent 75% of his £450 spending money.

How much did Calvin spend ?

4. Margaret took £350 on holiday and returned with 15% of her money.

How much money did Margaret spend on holiday ?

5. Of the 380 goals scored in a season,

15% were scored by penalties and

70% were scored by the home team.

(a) How many penalties were scored ?

(b) How many were scored by the away team ?

6. An advert makes 2% of an hours television.

How long is the advert (to the nearest second) ?



# Fractions, Percentages, Decimals

## Exercise 5

1. Write down the simplest fraction for each of the following percentages :-

- (a) 50%                      (b) 20%                      (c) 100%                      (d) 25%  
(e)  $33\frac{1}{3}\%$                       (f) 5%                      (g) 10%                      (h) 1%

2. Find without a calculator :-

- (a) 25% of £840                      (b)  $33\frac{1}{3}\%$  of 96 metres                      (c) 20% of 80 €  
(d) 5% of 350 km                      (e) 1% of £20                      (f) 50% of 121 kg  
(g)  $33\frac{1}{3}\%$  of 135 mm                      (h) 10% of £5                      (i) 5% of 380 €

3. A 350 gramme microwave pizza has only 5% fat.  
How many grammes of fat does the meal have ?



4. Find :-

- (a) 1% of £800                      (b) 2% of £800                      (c) 7% of £800

## Exercise 6

1. Write down the simplest fraction for each of the following percentages :-

- (a) 75%                      (b) 30%                      (c) 80%                      (d) 70%  
(e)  $33\frac{1}{3}\%$                       (f)  $66\frac{2}{3}\%$                       (g) 40%                      (h) 30%

2. Find without a calculator :-

- (a) 50% of £9                      (b)  $33\frac{1}{3}\%$  of 360 metres                      (c) 80% of 90 €  
(d) 25% of 300p                      (e) 60% of 240 p                      (f)  $66\frac{2}{3}\%$  of 121 kg  
(g) 70% of 520 cm                      (h) 75% of 9600 kg                      (i) 75% of £440  
(j) 30% of 3100 km                      (k) 75% of £5                      (l)  $66\frac{2}{3}\%$  of 1.2 kg

3. Explain how you might (mentally) calculate 15% of £80.  
4. Explain how you might (mentally) calculate  $17\frac{1}{2}\%$  of £80.  
5. Value added tax (VAT) is calculated at  $17\frac{1}{2}\%$ .  
Find the VAT on a wrist watch priced at £240.



# Solutions

## Chapter 6 Exercise 2

1. a 23      b 13      c 16      d 9  
    e 7      f 11      g 44      h 13
2. a 27      b 16      c 9      d 28  
    e 189     f 60      g 567    h 121
3. a 90      b 150
4. 20
5. 20

## Chapter 6 Exercise 3

1. a  $\frac{41}{100}$  (0.41)      b  $\frac{93}{100}$  (0.93)  
    c  $\frac{7}{100}$  (0.07)      d  $\frac{23}{100}$  (0.23)  
    e  $\frac{99}{100}$  (0.99)      f  $\frac{115}{1000}$  (0.115)  
    g  $\frac{15}{1000}$  (0.015)    h  $\frac{825}{10000}$  (0.0825)
2. a  $\frac{1}{5}$       b  $\frac{9}{20}$       c  $\frac{3}{20}$       d  $\frac{3}{4}$   
    e  $\frac{1}{20}$       f  $\frac{7}{20}$       g  $\frac{2}{3}$       h  $\frac{1}{8}$
3. a 32%      b 30%      c 62.5%    d 13.75%
4. 80%
- 5 English (72%) Maths (70%) French (64%) Music (62.5%)

## Chapter 6 Exercise 4

1. a £12      b 100 kg    c £90      d 18 g  
    e £5.28    f 190 cm    g £9.60    h 30€  
    i 4p
2. 448
3. £337.50
4. £297.50
5. a 57      b 152
6. 72 secs

## Chapter 6 Exercise 5

1. a  $\frac{1}{2}$       b  $\frac{1}{5}$       c 1      d  $\frac{1}{4}$   
    e  $\frac{1}{3}$       f  $\frac{1}{20}$     g  $\frac{1}{10}$     h  $\frac{1}{100}$
2. a £210      b 32 m      c 16€      d 18 km  
    e 20p      f 60 kg      g 45 mm    h 50p  
    i 19€
3. 17.5 g
4. a £8      b £16      c £56

## Chapter 6 Exercise 6

1. a  $\frac{3}{4}$       b  $\frac{3}{10}$       c  $\frac{4}{5}$       d  $\frac{7}{10}$   
    e  $\frac{1}{3}$       f  $\frac{2}{3}$       g  $\frac{2}{5}$       h  $\frac{3}{10}$
2. a £4.50      b 120 m      c 72€      d 75p  
    e 144p      f 80 kg      g 364 cm    h 7200 kg  
    i £330      j 930 km    k £3.75      l 0.8 kg

3. 10% of £80 = £8  
    5% of £80 = £4  
    = £12
4. 10% of £80 = £8  
    5% of £80 = £4  
    2  $\frac{1}{2}$  % of £80 = £2  
    = £14
5. £42 (24 + 12 + 6)

# Ratio- No Solutions

## Exercise 1



1. Write down the ratio of
- spiders : webs
  - webs : spiders.



2. Write down the ratio :-
- snowmen : Santas
  - footballs : golf balls
  - Santas : snowmen
  - golf balls : footballs
  - Santas : footballs
  - balls : snowmen.



3. A golf club has 63 male and 57 female members.  
What is the ratio of :-
- men : women
  - women : men
  - men : total members
  - total members : women ?

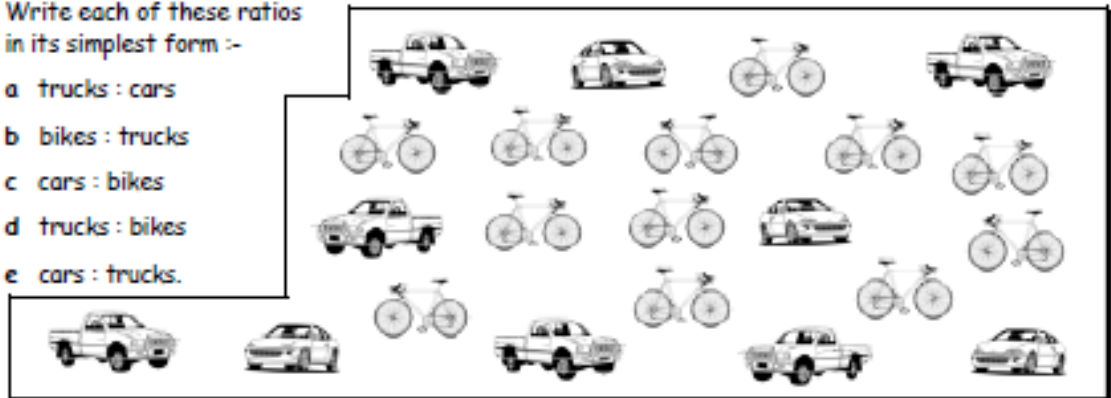
## Exercise 2



1. Simplify each ratio as far as possible :-
- |           |           |           |           |          |            |
|-----------|-----------|-----------|-----------|----------|------------|
| a 20 : 10 | b 30 : 10 | c 40 : 20 | d 12 : 6  | e 15 : 5 | f 18 : 3   |
| g 7 : 14  | h 8 : 32  | i 11 : 77 | j 36 : 12 | k 3 : 51 | l 17 : 68. |

2. Write each of these ratios in its simplest form :-

- trucks : cars
- bikes : trucks
- cars : bikes
- trucks : bikes
- cars : trucks.



3. Gordon has 32 squidgies, Tom has 16, Ian has 24 and Mary has 12.  
Write down the ratio of squidgies in their simplest form for :-
- Gordon : Mary
  - Tom : Ian
  - Mary : Tom
  - Ian : Gordon
  - Boys' squidgies : girls' squidgies
  - Gordon and Tom : Ian and Mary.



# Ratio- No Solutions

## Exercise 3



1. Jenny wants to make punch for her party.

She needs 3 glasses of orange juice to 2 glasses of cranberry. (ratio of 3:2).

If she uses 12 glasses of orange, how many glasses of cranberry does she need ?

orange	cranberry
$x \times \begin{matrix} 3 \\ \curvearrowright \\ 12 \end{matrix}$	$\begin{matrix} 2 \\ \curvearrowright \\ \dots \end{matrix} \times x$

2. Wendy the witch uses 3 parts (magic) dust to 4 parts slime for her superbrew.

How many parts slime does Wendy need for :-

a 6 parts dust    b 21 parts dust    c 51 parts dust    d 4.5 parts dust ?



3. In an orchard, the ratio of red apples to green apples is 7 : 4. If there are :-

a 21 red apples, how many are green ?      b 84 red apples, how many are green ?  
 c 32 green apples, how many are red ?      d 52 green apples, how many are red ?



## Exercise 4



1. Share €150 between Mark and May in the ratio 2 : 1. (Hint: remember there are 3 shares).

2. Bill and Bob win a lottery and share €1000 in the ratio 5 : 3. How much will each receive ?

3. Share the following in the ratio given :-

a \$300 between George and Jim in a 3 : 7 ratio.  
 b €20 000 between Carina and Hilary in a 3 : 2 ratio.  
 c €2 790 between Pat and Mick in a 5 : 4 ratio.  
 d A million pounds between James and Pauline in a 7 : 13 ratio.



## Revision Exercise

1. Write down the ratio of :-

a birds : bees

b bats : birds



c bees : bats

d bats : bees.

2. Simplify the following ratios as far as possible :-

a 12 : 6

b 18 : 3

c 21 : 36

d 24 : 60

e 13 : 117.

3. From the word **CHAMPIONSHIP**, write down in its simplest form the ratio of the number of :-

a H's : P's

b I's : vowels

c vowels : consonants.

4. The ratio of cats to dogs in a town was 7 : 3.

a How many dogs if there were 28 cats ?

b How many cats if there were 27 dogs ?

5. Share :-

a €100 between Ralph and Hugh in a ratio of 3 : 2.

b €12 225 between Dan and Ed in a 7 : 8 ratio.





# Time

## Exercise 2

### Problems involving half/quarter hours



1. Find the unknown quantity in each of the following :-

- |   |                      |                            |                              |
|---|----------------------|----------------------------|------------------------------|
| a | Distance = ? km      | Speed = 40 km/hr           | Time : $2\frac{1}{2}$ hours. |
| b | Distance = 900 miles | Speed = ? mph              | Time : $1\frac{1}{2}$ hours. |
| c | Distance = 210 km    | Speed = 60 km/hr           | Time : ? hours.              |
| d | Speed = 240 km/hr    | Time = 3 hrs 30 mins       | Distance = ?                 |
| e | Speed = 100 m/min    | Time = $2\frac{1}{4}$ mins | Distance = ?                 |
| f | Speed = 72 km/hr     | Distance = 18 km           | Time = ?                     |

2. a A jogger took 1 hour and 15 minutes to cover 11.25 km.

What was the average speed in km/hr ?

b A boat takes 6 hours and 45 minutes at an average speed of 20 km/hr to travel from Port A to Port B.

What far is it from Port A to Port B ?



3.



A train leaves Ayton at 1500 hours and travels to Beeton 75 km away at 30 km/hr.

The train is due to arrive at Beeton at 1720.

Will it arrive on time ?

# Solutions

## Answers to Chapter 15

### Exercise 1 - Time, Distance and Speed

1. a 60 km    b 90 mph    c 2.5 hrs    d 12 secs
2. a 4.5 mins    b 45 m    c 40 km/hr
3. a 2 hrs    b 0.5 hr
4. a 250 metres per min    b 300 metres per min
5. 50 minutes

### Exercise 2 - Problem solving - $\frac{1}{2}$ & $\frac{1}{4}$ hrs

1. a 100 km    b 600 mph    c 3.5 hrs  
   d 840 km    e 225 m    f 15 mins
2. a 9 km/hr    b 135 km
3. No - will be 10 minutes late

# More Time

## Exercise 1

1. Change the following to 24 hour times :-

- |                                   |                                    |              |              |
|-----------------------------------|------------------------------------|--------------|--------------|
| (a) 8:30 am                       | (b) 1:50 pm                        | (c) 4:20 pm  | (d) 9:01 pm  |
| (e) 6:10 am                       | (f) 9:45 pm                        | (g) 11:12 pm | (h) 12:10 pm |
| (i) 7:08 pm                       | (j) 11:59                          | (k) 11:59 am | (l) midnight |
| (m) Quarter past nine at night    | (n) Half past two in the afternoon |              |              |
| (o) Quarter to six in the evening | (p) Twelve minutes to midnight.    |              |              |

2. Change the following to 12 hour times :-

- |          |          |          |          |
|----------|----------|----------|----------|
| (a) 0440 | (b) 1610 | (c) 2205 | (d) 1910 |
| (e) 1130 | (f) 0010 | (g) 1255 | (h) 1010 |
| (i) 1706 | (j) 0101 | (k) 2010 | (l) 0000 |

## Exercise 2

1. How long is it from :-

- |                         |  |                        |
|-------------------------|--|------------------------|
| (a) 3:05 pm to 5:20 pm  | (b) 5:15 am to 8:55 am   | (c) 6:30 pm to 8:05 pm |
| (d) 9:50 pm to 11:15 pm | (e) 1430 to 1945   | (f) 0950 to 1605       |
| (g) 1442 to 2020        | (h) Quarter to six in the morning until five past nine at night. |                        |

2. Kay is not sure which video to watch.

- (a) If she starts to watch one of the videos at 8:35 pm, list the finishing time of each video.
- (b) Kay decides to watch all three videos. What time would the last video finish ?



2 hrs 40 mins	1 hr 25 mins	2 hrs 55 mins
------------------	-----------------	------------------

3. New York is 5 hours behind our time

(ie Glasgow time 6 pm → New York time 1 pm).

An aeroplane leaves Glasgow for New York at 1:45 pm with a flight time of 6 hours 35 mins.

What is the time in New York when the plane lands ?



# Solutions

## Chapter 3 Exercise 1

1. a 0830      b 1350      c 1620      d 2101  
e 0610      f 2145      g 2312      h 1210  
i 1908      j 2359      k 1159      l 0000  
m 2115      n 1430      o 1745      p 2348
2. a 4-40 am    b 4-10 pm    c 10-05 pm    d 7-10 pm  
e 11-30 am    f 12-10 am    g 12-55 pm    h 10-10 am  
i 5-06 pm    j 1-01 am    k 8-10 pm    l midnight

## Chapter 3 Exercise 2

1. a 2 hrs 15 mins      b 3 hrs 40 mins  
c 1 hr 35 mins      d 1 hr 25 mins  
e 5 hrs 15 mins      f 6 hrs 15 mins  
g 5 hrs 38 mins      h 15 hrs 20 mins
2. a A = 11-15 pm  
B = 10-00 pm  
C = 11-30 pm  
b 3-35 am
3. 3-20 pm