

MATHEMATICS

N5

Numeracy

Exercise 1 (Revision for Part 1)

1. James bought a flat for £55 000. It **appreciated** in value by 3% every year. Round all answers to 2 significant figures
 - a) How much is the flat worth after **1 year**?
 - b) How much is the flat worth after **2 years**?
 - c) How much is the flat worth after **3 years**?
 - d) How much is the flat worth after **10 years**?(HINT: there is a quick method which your teacher will show you...)
2. Laura bought a car for £12 000. It depreciated in value by 6% per year. How much will the car be worth if she wants to sell it after 3 years?
3. Scott has £2000 in his savings account which pays 2.5% interest per year, if he leaves the money there for 3 years how much will he have? Round your answer to 3 significant figures
4. Barbara paid £750 for a new computer, if it depreciates 3.5% each year how much is it worth after 5 years? Round your answer to 3 significant figures
5. The village of Strathaven currently has a population of 8400. Its population is expected to increase by 4% each year over the next five years. What will its population be in three years time?

- 6.** An empty box has a weight of 325g.
When twenty bars of soap are put into it, it has a weight of 1625g.
What is the weight of one bar of soap?
- 7.** An empty bottle of water weighs 25g and holds 300ml of water which weighs 300g. How much would a box of 50 full bottles weigh in total?
- 8.** A school orders 10 boxes of rulers, each box contains 50 rulers which weigh 2g each. If the empty boxes themselves weigh 20g then how much will the total order weigh?
(HINT: work out the weight of all the rulers and the weight of the empty boxes then add them together)
- 9.** A box contains 50 pens, each pen weighs 2g and the empty box weighs 75g.
- a)** How much would 1 full box of pens weigh?
- b)** If a company ordered 12 boxes of pens would the total weight be more or less than 2kg?

10. A drinks manufacturer sells bottles of juice in 200 millilitre bottles.
Each empty bottle weighs 50 grams.

To transport the full bottles, they are packaged in trays of 150 bottles.

A shop orders 30 trays of these drinks. The manufacturer's delivery van can take a maximum load of 1 tonne.

1 litre of juice weighs 1 kilogram.

- a)** How many bottles did the shop order?
- b)** What is the weight of all the empty bottles?
- c)** What is the weight of all the juice?
- d)** What was the total weight of the order?
- e)** The manufacturer's delivery van can take a maximum load of 1 tonne. Can the supermarket's order be delivered in one van load?

11. Euan went to Spain on holiday. He took 500 Euros with him but only spent 450 Euros. If he changes the rest back into pounds how much would he receive?

The exchange rate is: £1 = 1.21 Euros

12. Ann went on a holiday to Florida for 7 days, she took with her \$850 but only spent on average \$110 per day. On her return she changed the rest back into pounds.

The exchange rate is: £1 = \$1.45

a) How much did Ann spend?

b) How much did she get back? (in pounds)

13. Jean went on a holiday to India for 7 days, she took with her 35 000 Rupee but only spent on average 4500 Rupee per day. On her return she changed the rest back into pounds.

The exchange rate is: £1 = 102.21 Indian Rupee

a) How much did Jean spend?

b) How much did she get back? (in pounds)

14. Caroline went to Mexico on holiday.

She took 50 000 Mexican Peso with her to spend. She spent an average of 6510 Mexican Peso on each of the seven days that she was in Mexico. On her return home, she changed her remaining Mexican Peso back to Pounds Sterling.

The bank would only change the money in multiples of 10 Mexican Peso.

£1 = 25.78 Mexican Peso

How much, in Pounds Sterling, will Caroline get for her remaining Mexican Peso? Give your answer to the nearest penny.

15. Emma went to Turkey on holiday.

She took 850 Turkish Lira with her to spend. She spent an average of 105 Turkish Lira on each of the seven days that she was in Turkey.

On her return home, she changed her remaining Turkish Lira back to Pounds Sterling.

The bank would only change the money in multiples of 10 Turkish Lira.

£1 = 3.71 Turkish Lira

How much, in Pounds Sterling, will Emma get for her remaining Turkish Lira? Give your answer to the nearest penny.

Exercise 2 (Revision for Part 2)

1. a) The Eurostar train leaves London, Great Britain at 1057 local time and arrives in Paris, France at 1613 local time. The time in France is one hour ahead of the time in Britain.

How long did the train journey take?

- b) There are three types of seats available on the Eurostar train: Standard, Standard Premier and Business Premier.

Fares for 1 adult are shown in the table.

Standard		Standard Premier		Business Premier
Non-flexible	Semi-flexible	Non-flexible	Semi-flexible	Fully flexible
£134.50	£143	£159.50	£175	£225

Children up to age 12 pay 70% of the adult fare.

Travel insurance is also available as shown in the table below.

Travel insurance	£20 per person
------------------	----------------

Children up to age 12 pay 50% of the insurance premiums.

A £4 fee will be added to all credit card transactions.

Mr and Mrs Jones and their two children aged 7 and 10 want to travel from London to Paris on the Eurostar train.

- i How much would it cost to buy Standard Premier, semi-flexible tickets for all four family members?
- ii How much would it cost to buy travel insurance for all four family members?
- iii If they plan on paying for the whole trip on a credit card how much would it cost?

2. a) The Eurostar train leaves London, Great Britain at 1324 local time and arrives in Paris, France at 1803 local time. The time in France is one hour ahead of the time in Britain.

How long did the train journey take?

b) There are three types of seats available on the Eurostar train: Standard, Standard Premier and Business Premier.

Fares for 1 adult are shown in the table.

Standard		Standard Premier		Business Premier
Non-flexible	Semi-flexible	Non-flexible	Semi-flexible	Fully flexible
£125.50	£131	£157.25	£165.50	£235

Children up to age 12 pay 75% of the adult fare.

Travel insurance is also available as shown in the table below.

Travel insurance	£20 per person
------------------	----------------

Children up to age 12 pay 55% of the insurance premiums.

A £4 fee will be added to all credit card transactions.

Mr and Mrs Jones and their two children aged 9 and 11 want to travel from London to Paris on the Eurostar train.

- i How much would it cost to buy Standard Premier, semi-flexible tickets for all four family members?
- ii How much would it cost to buy travel insurance for all four family members?
- iii If they plan on paying for the whole trip on a credit card how much would it cost?

3. a) The Eurostar train leaves London, Great Britain at 1137 local time and arrives in Paris, France at 1717 local time. The time in France is one hour ahead of the time in Britain.

How long did the train journey take?

- b) There are three types of seats available on the Eurostar train: Standard, Standard Premier and Business Premier.

Fares for 1 adult are shown in the table.

Standard		Standard Premier		Business Premier
Non-flexible	Semi-flexible	Non-flexible	Semi-flexible	Fully flexible
£132.50	£139	£160.50	£170	£223

Children up to age 12 pay 70% of the adult fare.

Travel insurance is also available as shown in the table below.

Travel insurance	£23 per person
------------------	----------------

Children up to age 12 pay 50% of the insurance premiums.

A £4 fee will be added to all credit card transactions.

Mr and Mrs Jones and their two children aged 7 and 10 want to travel from London to Paris on the Eurostar train.

- They decide to buy Standard Premier, semi-flexible tickets.
- They also buy travel insurance for all four people in their party.
- They pay by credit card.
- They have budgeted £700 for travel costs.

Have they budgeted enough for travel costs?

4. a) The Eurostar train leaves London, Great Britain at 0957 local time and arrives in Paris, France at 1413 local time. The time in France is one hour ahead of the time in Britain.

How long did the train journey take?

- b) There are three types of seats available on the Eurostar train: Standard, Standard Premier and Business Premier.

Fares for 1 adult are shown in the table.

Standard		Standard Premier		Business Premier
Non-flexible	Semi-flexible	Non-flexible	Semi-flexible	Fully flexible
£133.50	£141	£158.50	£174	£220

Children up to age 12 pay 70% of the adult fare.

Travel insurance is also available as shown in the table below.

Travel insurance	£22.50 per person
------------------	-------------------

Children up to age 12 pay 50% of the insurance premiums.

A £4 fee will be added to all credit card transactions.

Mr and Mrs Jones and their two children aged 3 and 6 want to travel from London to Paris on the Eurostar train.

- They decide to buy Standard Premier, semi-flexible tickets.
- They also buy travel insurance for all four people in their party.
- They pay by credit card.
- They have budgeted £650 for travel costs.

Have they budgeted enough for travel costs?

Exercise 3 (Revision for part 3)

1. a) $\frac{1}{3} + \frac{1}{6}$ b) $\frac{2}{5} + \frac{1}{3}$ c) $\frac{1}{6} + \frac{2}{5}$ d) $\frac{1}{5} + \frac{1}{4}$
2. In Stonehouse Primary School $\frac{2}{5}$ of the pupils chose fish fingers and $\frac{1}{3}$ of the pupils chose burgers one lunchtime. The rest chose chicken nuggets.
What fraction of the pupils chose chicken nuggets?
3. In Maccanhill Primary School $\frac{2}{3}$ of the pupils chose pizza and $\frac{1}{4}$ of the pupils chose soup one lunchtime. The rest chose sandwiches.

What fraction of the pupils chose sandwiches?

4. In Robert Smillie Primary School $\frac{1}{2}$ of the pupils chose Maths as their favourite subject and $\frac{1}{3}$ of the pupils chose English one. The rest chose PE.
What fraction of the pupils chose PE?

5. The ratio of the sale of DVD's to Blu-ray's in a shop one day is 5:3. That day the shop sells 75 Blu-ray discs, how many DVD's does the shop sell?
6. The ratio of male to female teachers in a secondary school is 4:9. There are 24 male teachers in the school. How many female teachers are there?
7. Blue, yellow and red paint are mixed together in the ratio 3:2:4. 15 litres of blue paint is used. How much red paint is needed?
8. The pop group 2 Dimension performed a concert at the Bigtop Arena. There were three grades of seats available. Grade A seats were the most expensive, grade B seats the middle price and grade C seats the cheapest. The cheapest seats at the concert were £7.

The ratio of ticket prices was:

$$\mathbf{A:B:C = 3:2:1}$$

- a) What is the price of each type of seat?
- b) The ratio of the number of each type of seat was:

$$\mathbf{A:B:C = 3:2:5}$$

There was sell-out crowd of 3000 tickets. Calculate the total amount taken in ticket sales.

- 10** If a letter is chosen at random from the word SUCCESS, what is the probability that it will be:
- a)** the letter S? **b)** the letter C?
- 11** If a letter is chosen at random from the word PEPPER, what is the probability that it will be:
- a)** the letter P? **b)** the letter E?
- 12** When a die is rolled what is the probability that the outcome is :
- a)** the number 5 ? **b)** an even number ? **c)** an odd number ?
- 13** A bag contains 6 red counters and 10 green counters.
- a)** If a counter is removed what is the probability that it is red?
- b)** If the counter was red and it was not replaced what is the probability that the next counter to be picked out would also be red?

- 14** A supermarket orders eggs in boxes of six.
In a delivery of 500 boxes of eggs, 9 boxes contained at least one broken egg.
- a)** Calculate the probability of a box containing at least one broken egg?
- b)** If the probability of a box containing at least one broken egg is 0.015 is your answer to part **a)** more or less than expected?
Use your working to explain your answer.
- 15** A supermarket orders cakes in boxes of 4.
In a delivery of 700 boxes of cakes, 14 boxes contained at least one damaged cake.
- a)** Calculate the probability of a box containing at least one damaged cake?
- b)** If the probability of a box containing at least one damaged cake is 0.03 is your answer to part **a)** more or less than expected?

Exercise 4 (Revision for part 4)

1. Two athletes in a triathlon compared their training times in a bar graph.

a) What was Barbara's swimming time?

b) What was Amanda's time for running?

c) What time did Barbara take for the cycling?

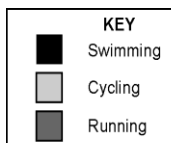
d) What time did Amanda do for swimming?

e) Which girl had the same time for two events?

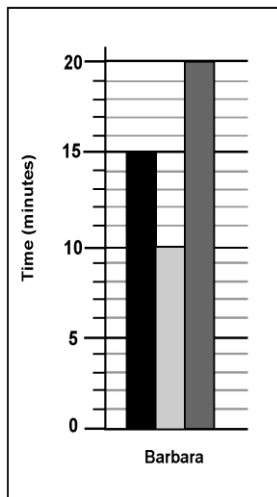
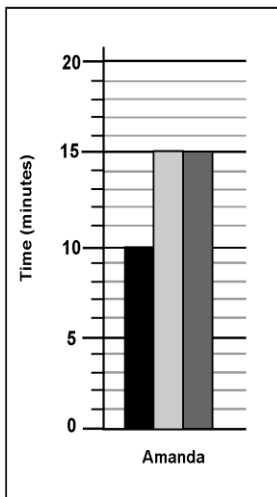
f) Who had the faster cycle time?

g) Calculate the total time for each girl.

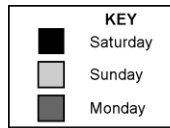
h) Which girl is faster in training?



TRIATHLON TRAINING TIMES



2. The weather at 2 seaside resorts is compared over a Bank Holiday weekend.



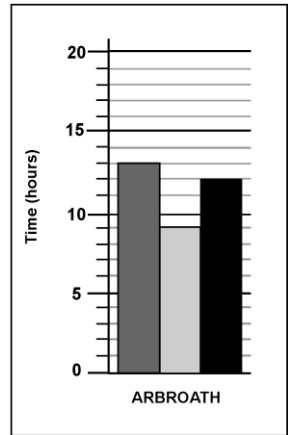
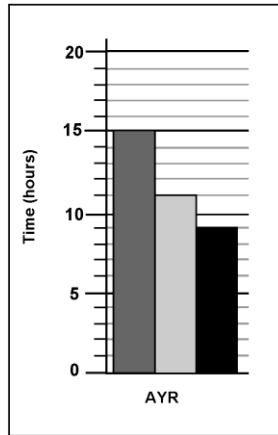
HOURS OF SUNSHINE

a) How many hours of sunshine did Ayr have on Saturday?

b) How much sunshine did Arbroath have on Monday?

c) How much sunshine was there in Ayr on Sunday?

d) What was Monday's sunshine time in Arbroath?



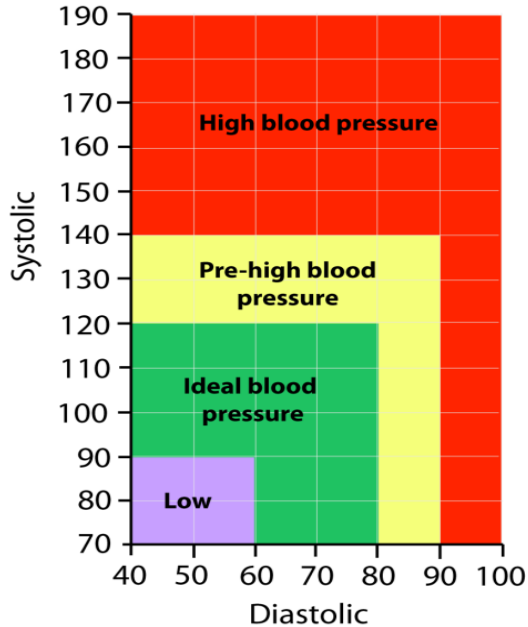
e) Which town was sunnier on Monday?

f) Which town was cloudier on Saturday?

g) How many hours of sunshine did each town have altogether?

h) Which town was sunnier?

3. The blood pressure chart shows ranges of high, low and healthy blood pressure readings.



a) Karen has her blood pressure taken, her results were as follows:

Systolic 110

Diastolic 70

What does this tell us about her blood pressure?

b) John has his blood pressure taken, his results were as follows:

Systolic 130

Diastolic 85

What does this tell us about his blood pressure?

c) Lucy has her blood pressure taken, her results were as follows:

Systolic 80

Diastolic 50

What does this tell us about her blood pressure?

d) James has his blood pressure taken, his results were as follows:

Systolic 150

Diastolic 95

What does this tell us about his blood pressure?

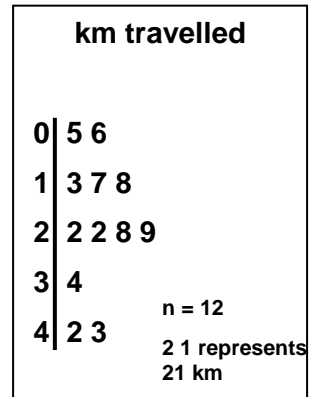
e) Joseph has his blood pressure taken. The results are shown on the two dials below.



Explain what this tells Joseph about his blood pressure.

4. This stem and leaf diagram shows the distance travelled by a taxi on different hires.

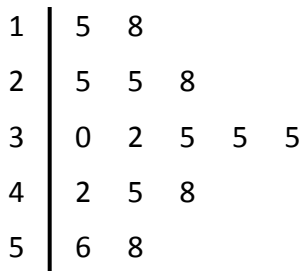
- (a) How many journeys are shown?
 (b) What is the **longest** journey?
 (c) What is the **average distance (mean)** travelled per journey?



5) A random sample of 15 workers from different professions are asked how many hours they work in a week.

The stem and leaf diagram illustrates the results.

Hours Worked



1 | 5 represents 15 hours
 n = 15

- a) Write down the most number of hours worked.
 b) Find the mean number of hours worked.

6. The resting heart rate was monitored (in beats per minute) for a group of 21 people before they started on a fitness programme. It was then monitored at the end of the programme. The results are shown below.

Fitness before		Fitness after programme
9 5 3 5		2 4 8 8
9 7 4 5 6		0 1 2 2 2 4 5 5 7 8
8 7 6 6 3 4 7		2 7 7 9
8 8 6 5 8		0 2
6 6 5 4 9		1
n = 21		n = 21

- a) What was the highest recorded resting heart rate.
- b) Calculate the mean resting heart rate before the fitness programme started.

The mean resting heart rate after the fitness programme was 67.4 beats per minute.

- c) Has the fitness programme had an effect on the resting heart rates.

7. The resting heart rate was monitored (in beats per minute) for a group of 21 people before they started on a fitness programme. It was then monitored at the end of the programme. The results are shown below.

Fitness before		Fitness after programme
8 4 3 4		1 4 6 8
8 7 4 5 5		0 1 1 2 2 4 5 5 7 8
8 7 7 6 2 4 6		2 7 8 9
7 7 6 5 7		0 2
9 6 5 4 8		1
$n = 21$		$n = 21$

- a) What was the highest recorded resting heart rate.
- b) Calculate the mean resting heart rate before the fitness programme started.

The mean resting heart rate after the fitness programme was 57.3 beats per minute.

- c) Has the fitness programme had an effect on the resting heart rates.

ANSWERS

Exercise 1:

1. a) £57000 b) £58 000 c) £60 000 d) £74000
2. £9 970
3. £2 150
4. £628
5. 10 219.88 (10 220 to the nearest whole number)
6. 65g
7. 16 250g
8. 300g
9. a) 175g b) 2100g, therefore more than 2kg.
10. a) 4500 bottles b) 225 000g (225kg) c) 900 000g (900kg)
 d) 1 125 000g (1 125kg/ 1.125T)
 e) No the delivery van can't take the order in one load.
11. £41.32
12. a) \$770 b) £55.17
13. a) 31 500 Rupee b) £34.24
14. £171.84
15. £29.65

Exercise 2:

1. a) 3hrs 16mins b) i £595 ii £60 iii £659
2. a) 3hrs 39mins b) i £579.26 ii £62 iii £645.26
3. a) 4hrs 40 mins b) i £578 ii £63 iii £645, yes they have budgeted enough.
4. a) 3hrs 16mins b) i £591.60 ii £67.50 iii £663.10, no they haven't budgeted enough.

Exercise 3:

1. a) $\frac{9}{18}$ or $\frac{1}{2}$ b) $\frac{11}{15}$ c) $\frac{17}{30}$ d) $\frac{9}{20}$
2. $\frac{4}{15}$ chose chicken nuggets
3. $\frac{1}{12}$ chose sandwiches
4. $\frac{1}{6}$ chose PE
5. 125 DVDs
6. 54 Women
7. 20L of red paint
8. a) Grade A costs £25 b) £41 400
Grade B costs £ 14

10. a) $\frac{3}{7}$ or 0.43 b) $\frac{2}{7}$ or 0.29
11. a) $\frac{3}{6}$ or $\frac{1}{2}$ or 0.5 b) $\frac{2}{6}$ or $\frac{1}{3}$ or 0.33
12. a) $\frac{1}{6}$ or 0.17 b) $\frac{3}{6}$ or $\frac{1}{2}$ or 0.5 c) $\frac{3}{6}$ or $\frac{1}{2}$ or 0.5
13. a) $\frac{6}{16}$ or $\frac{3}{8}$ or 0.375 b) $\frac{5}{15}$ or $\frac{1}{3}$ or 0.33
14. a) $\frac{9}{500}$ or 0.018 b) More than expected
15. a) $\frac{14}{700}$ or 0.02 b) Less than expected

Exercise 4:

1. a) 15 mins b) 15 mins c) 10 mins d) 10 mins
 e) Amanda f) Barbara g) Aman- 40mins Barb-45mins
 h) Amanda
2. a) 9 hrs b) 13 hrs c) 11hrs d) 13hrs
 e) Ayr f) Ayr g) Ayr- 35hrs Arbroath-34hrs
 h) Ayr
3. a) Ideal b) Pre-high c) Low d) High
 e) High
4. a) 12 b) 43km c) mean=25.1
5. a) 58hrs b) mean=35.1
6. a) 96 b) 76.9 c) Yes the average resting heart rate is lower.
7. a) 89 b) 66.8 c) Yes the average resting heart rate is lower.