Science Skills

Level 3

Reading Tables Book 2



**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Tables**

**Tables** are used to display the results of an investigation.

Tables are used to **compare** things.
They show the **relationship** between two or more things.

It is very important to read the headings carefully.

The table below shows the number of units of alcohol in some common drinks.
The things being compared are the **drinks** and the **number of units of alcohol**.
You know what things are being compared because they are in the **headings.**

In this table the headings are in italics.

  **Headings**



Before you begin to look at the question, you should **read** the **whole table**. You should put it into **sentences**, building in the **headings**. Read it aloud if this helps.

*Example:*

In the drink 1 bottle of alcopop there are 2.0 units of alcohol.
In the drink 1 pint of lager, there are 2.3 units of alcohol.
In the drink 1 glass of wine, there are 2.1 units of alcohol.
In the drink 1 pint of cider, there are 3.0 units of alcohol.
In the drink 1 measure of spirits, there are 1.4 units of alcohol.

Once you have done this it should be very easy to **find** any information that you need for the questions.

Since you are working at **Level 3**, you are expected not only to find information in a table, but also to use the information to do a **calculation**.

Some of the most common types of calculation are on the following page.

**Remember:**
Look very, very closely at the questions. Some of them can be tricky.

 **Interpreting the Tables**

You are expected to do the following:

1. **Extract information** directly from the table.

2. Find the relevant information and then **add**, **subtract** or **multiply**.

3. **Divide**.
Questions which start “*How many times greater*…” or “*How many times more*…” usually require you to divide.

4. **Percentages.**
Remember that *per cent* means *out of a hundred*. The symbol is **%**.
So 54% means 54 out of a hundred.

The calculation should be as follows:
**The number you have been asked about ÷ the total number x 100**

*Example*:

Calculate the percentage of students studying biology in the student group below:

|  |  |
| --- | --- |
| *Subject* | *Number of Students* |
| Medicine | 8 |
| Biology | 2 |
| Engineering | 4 |
| Mathematics | 6 |

 Number of students studying biology 2
Total number of students 20
(The number you have been asked about (**2**) **÷** the total number (**20**) **x** **100**)
2 ÷20 x 100 = **10%**

5. **Averages**
**Add up all the numbers in the category and divide by the number of entries.**

 Example:

Calculate the **average** mark achieved by Brian in the tests.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Name of student* | *Test 1* | *Test 2* | *Test 3* | *Test 4* | *Test 5* |
| Linda | 55 | 62 | 60 | 64 | 64 |
| Brian | 39 | 39 | 45 | 48 | 49 |
| Melanie | 46 | 51 | 53 | 59 | 65 |
| John | 76 | 79 | 79 | 81 | 85 |

 Brian’s marks were 39 + 39 + 45 + 48 + 49 = 220
(There were 5 tests)
219 ÷ 5 = **44**

6. **Draw Conclusions**
***Draw conclusions*** means ***write what you have found out*** from the table.

 *Example*:

 A student carried out an investigation to fine out how long it took two substances to dissolve first in water at 30ºC, then at 60ºC, then at 80ºC.

 The results are in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| *Substances* | *30 ºC* | *60ºC* | *80ºC* |
| **A** | 20 minutes | 15 minutes | 8 minutes |
| **B** | 11 minutes | 9 minutes | 3 minutes |
| **C** | 30 minutes | 22 minutes | 14 minutes |
| **D** | 15 minutes | 10 minutes | 4 minutes |
| **E** | 35 minutes | 21 minutes | 13 minutes |

**What conclusion can you draw from the table?**

*You have to compare the substances and the times.

As you* ***read the table*** *aloud in* ***sentences****, you become aware that as the temperature is getting higher, the number of the minutes is getting smaller.*

 *Since the student wanted to know how quickly the substances dissolved, the conclusions will include the words****fastest, slowest, faster than, slower than, largest, smallest, increase, decrease****, etc.*

***The conclusion is what you found out****. There are lots of things you could write.
All the answers below are correct.
The more ‘****scientific’*** *ways of writing the conclusions are in* ***red****.*

* Substance B dissolved faster than all the rest at 30ºC
* Substance E was the slowest to dissolve at 30ºC
* All the substances dissolved at a different rate, no matter what the
temperature was.
* Substance A took longer to dissolve at 60ºC than Substance B and
Substance D.
* All the substances dissolved faster as the temperature increased.
* **The lower the temperature, the more slowly the substances dissolve.**
* **As the temperature increases, all the substances dissolve more
quickly.**
* **The greater the temperature, the faster the speed of dissolving.**

7. **Predict**

Tables are used to **predict**.

**‘Predict’ means use the information in the table to make an intelligent guess about something which is not in the table.**

After you have read the table in sentences, you will have noticed that the numbers are going up, going down or staying more or less the same.

*Example:*A student carried out an investigation to fine out how long it took two substances to dissolve first in water at 30ºC, then at 60ºC, then at 80ºC.

 The results are in the table below.

70ºC

|  |  |  |  |
| --- | --- | --- | --- |
| *Substances* | *30 ºC* | *60ºC* | *80ºC* |
| **A** | 20 minutes | 15 minutes | 8 minutes |
| **B** | 11 minutes | 9 minutes | 3 minutes |
| **C** | 30 minutes | 22 minutes | 14 minutes |
| **D** | 15 minutes | 10 minutes | 4 minutes |
| **E** | 35 minutes | 21 minutes | 13 minutes |

**Predict the number of minutes Substance C would have taken to dissolve if the temperature of the water was 70ºC.**

What to do:

*1. Find the data for Substance C in the table. (now coloured)*

*2. Decide where in the table 70ºC would be. (now marked)*

3. *The answer at Level 3 is* “**Between 22 minutes and 14 minutes**”.
*You do not have to guess an exact number. (If you did, it would be 18ºC or 19ºC.)*

If you are asked to predict the number of minutes Substance C would have taken to dissolve at **100ºC**, the answer would be “**Less than 14 minutes**”.
If you wanted to be more exact (though this is not usually necessary at Level 3) the answer would be 6ºC or 7ºC.

1.

Use the information in the table to answer the question below:

**Predict the number of starlings when the area of rough grass farmland was 850 000
hectares.**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ millions

2. The blood groups of **200 students** are shown in the table below.



What percentage of the students have Blood Group A? (Tick)

 a) 42%

b) 45%

c) 84%

d) 90%

3. Edward made a model tank from a cotton reel, an elastic band and a matchstick.



Draw two conclusions from these results.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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4.

Working

a) Calculate the **total** energy used in the months when the
 average outdoor temperature was **less than 15ºC**.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ kWh

b) Complete the conclusion below by circling the correct answer in the box.

 As the average outdoor temperature falls, the energy used…

 stays the same

 decreases

 increases

c) Predict the energy used in May when the average outdoor temperature was 15ºC.

 \_\_\_\_\_\_\_\_\_\_\_ kWh

5.

a) Complete the conclusion by circling the correct answer.

As exercise time increases, the volume of air in the lungs…

 increases

 decreases

 stays the same

b) Draw one other conclusion from these results.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) Predict the volume of air in the lungs after 3 minutes.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_cm3

6.

 Which food contained both starch and glucose?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7.

 Which type of seed stores **only sugar**? (Tick)

A Barley B Pea C Cabbage D Mustard

8. The table below shows information about different varieties of lily.



a) In which variety of lily is there one month between the first bud appearing and the
 first flower appearing?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) Which variety of lily has flowers for the longest time?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) How many varieties of lily would be expected to have flowers in late June?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. A student carried out an investigation to compare the effectiveness of detergents on
 stain removal.
 He used two types of detergents on two different materials at two different temperatures.



a) Which **conditions** left the t-shirt with most stain remaining?

 Type of detergent \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 T-shirt material \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) What percentage of stain was removed by the biological detergent from the cotton
 t-shirt at 30ºC?

 Working

 \_\_\_\_\_\_\_\_\_\_\_%

10. The table below shows the number of new plants growing on five spider plants
and five Mother of Thousands plants.



 Which of the following shows the **average** number of new plants on each type of plant?
 (Tick the correct line)



11. The tables below show information about some fuels.



a) Complete the sentence:

 As the number of carbon atoms increases, the energy released \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b) Name the fuel which releases 1560 kilojoules of energy.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. A group of students investigated the effects of exercise on pulse rate.
 The results are shown in the table below.



a) The average pulse rate for males before exercise is 84 beats per minute.

Calculate the average pulse rate for the females in the group before exercise.

Working

Average pulse rate for females is \_\_\_\_\_\_\_\_\_\_\_\_ beats per minute.

b) How many students had a recovery time which was greater than 5 minutes?

 \_\_\_\_\_\_\_\_\_\_ students

13. Coal contains mainly carbon.
 The table shows the percentage of
 carbon in different types of coal.

Calculate the mass of carbon present in **200 kilograms** of anthracite.
 Show your working clearly.

 Working

\_\_\_\_\_\_\_\_\_\_\_ kilograms

14. A student carried out an investigation to show how temperature affects the speed of the
 reaction between a sugar, found in syrup, and Benedict’s solution.



a) How does increasing the temperature affect the speed of the reaction?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) Predict how long the reaction would take at 65ºC

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ seconds