

Date: 20/2/14 E.Q.

Topic: Reporting What are the parts of an experiment report?

How do we write a good report?

Reporting:

There are 7 parts to a good experiment report.

What is the Aim?

① Aim - This is the question that you want to find out.

What is the Hypothesis?

② Hypothesis - This is what you think will happen in the experiment. It can also be called an educated guess.

What is the equipment?

③ Equipment - This is a list of everything that you will need to complete the experiment.

What is the method?

④ Method - This is a detailed, numbered list of how to complete the experiment. It is written in third person and it can include a diagram.

What are the results?

⑤ Results - This is all the data and observations that were recorded in the experiment. It should include tables and graphs.

What is the discussion?

⑥ Discussion - This is the analysis of the results. Scientists can talk about the problems they had and how they fixed them. How they could make the experiment better in the future. Ideas

for future experiments. What the results show and how they impact on society.

What is the conclusion?

⑦ Conclusion - This answers the aim.

Summary:

An experimental report is made up of 7 parts. These include: aim, hypothesis, equipment, method, results, discussion, and conclusion. If you include all of these things in your reports then they will be very good.

Date: 27/2/14
Topic: Observations

What are the types of observations?

What are the two types of observations?

Scientists use two types of observations:

- ① Qualitative - observations in words only.
Eg. The flowers are red.
- ② Quantitative - observations that use numbers.

Eg. There are 10 red flowers.

What do scientists use observations for?

From these observations, scientists can then make inferences (logical explanations) about what happened and why. They may then be able to predict what will happen in the future.

Eg. Observation: The dog barked.

Inference: The possum is back.

Prediction: The barking will scare it.

Eg. Observation: The cat is hiding under the bed ✓
Inference: The cat is scared. ✓
Prediction: My sister scared it. ✓

Eg. Observation: The leaves are turning brown ✓
Inference: The tree is dying. ✓
Prediction: I will have to get a new tree ✓

Summary: Scientists use qualitative and quantitative observations from which they can make inferences and predictions about what will happen.

Date:

Topic: What I
have
learnt

What have we learnt in
today's lesson?

What did
we do in
class today?

Today in class we went outside and modelled being a liquid, gas and solid. When being a solid we all bunched up tight and vibrated. When modelling a liquid we all stayed close together but moved around. When being a gas we all ran around really fast and separated.

What
experiment
did we
conduct?

In class we also conducted an experiment to prove the theory that gases can be compressed and liquids and solids can not be compressed. First we filled up a beaker with water and then filled up a syringe with water. We stuck our finger over the opening of the syringe and tried to push the water out. It was very hard and the water did not compress. We did the same for gas but -this time we filled up the syringe with air (oxygen), it was a lot easier and the air did compress. For -the solid we tried to push our desks into a small cube and obviously that didn't compress.

Summary:

In conclusion, today we have learnt that solids and liquids can not be compressed but gases can.

Date: 20/2/14 E.Q.

Topic: Reporting What are the parts of an experiment report?

How do we write a good report?

Reporting:

There are 7 parts to a good experiment report.

What is the Aim?

① Aim - This is the question that you want to find out.

What is the Hypothesis?

② Hypothesis - This is what you think will happen in the experiment. It can also be called an educated guess.

What is the equipment?

③ Equipment - This is a list of everything that you will need to complete the experiment.

What is the method?

④ Method - This is a detailed, numbered list of how to complete the experiment. It is written in third person and it can include a diagram.

What are the results?

⑤ Results - This is all the data and observations that were recorded in the experiment. It should include tables and graphs.

What is the discussion?

⑥ Discussion - This is the analysis of the results. Scientists can talk about the problems they had and how they fixed them. How they could make the experiment better in the future. Ideas

for future experiments. What the results show and how they impact on society.

What is the conclusion?

⑦ Conclusion - This answers the aim.

Summary:

An experimental report is made up of 7 parts. These include: aim, hypothesis, equipment, method, results, discussion, and conclusion. If you include all of these things in your reports then they will be very good.

Date: 3/3/14

Ancient Australia

Topic: Ancient Australia

How do we know what life was like for Australian Aboriginals before European contact?

How long ago did the first Aboriginals live in Australia?

Sources for Ancient Australia

What was the time before European contact known as?

When historians and archaeologists investigate 'ancient Australia', they mean the time before European contact, a time going back at least 45,000 years to when Aboriginals first lived here and further back again to the earliest evidence of what Australia was like.

Did Ancient Australians leave records about their lives?

As far as we know, ancient Australians left no written records about their lives before European contact.

What were the records after European contact like?

Written records from the time of European contact usually record information from a European viewpoint.

What do investigators use European sources for?

Investigators can use European sources to develop hypotheses about the lives of ancient Australians, but to prove them, they would need to find other types of sources to back them up.

Summary:

Ancient Australians migrated from Africa and have lived in Australia for many years.

There are not many written records of about their lives before European contact and all of the records written after European contact are from a European point of view.

Archaeologists and historians continue to investigate about life in 'Ancient Australia' as information that they gather helps them ^{to} develop hypotheses about the life that Aborigines lived.

Date: 11/3/14

E.o.

Topic:

What is a Dreamtime story?

Ancient Australia

① How are Dreamtime stories passed on?

Dreamtime stories, passed on in spoken form, have explained the origin and meaning of life in Australia to generations of Aboriginal people.

② What are the dreamtime stories about?

The stories tell of ancestral beings moving across the continent creating and moulding the land and its rivers, lakes, mountains and all living creatures.

③ What do they explain?

They explain the natural world and humans' relationship with it.

④ What can dreamtime stories be a source of information?

Depending how far back people can trace the existence of particular Dreamtime stories, they can be a source of information on ancient Aboriginal culture, laws, family relations and religious beliefs and rituals.

Why do

archaeologists look for sources?

Archaeologists look for sources dating back to ancient Australia that can back up the information these stories provide.

Summary:

Dreamtime stories are passed on in spoken form. Dreamtime stories explain the origin and meaning of life to Aboriginal Australians. The stories tell of ancestors being moving across the continent creating the landscape and living things. The stories can be a source of information on Aboriginal culture, laws, family, relationships and beliefs. Archaeologists look for sources from Ancient Australia to back up the information these stories provide.

Date: 31/3/14

Topic:
Decimals

How do we divide decimals without using a calculator?

How do we divide a decimal by a power of 10?

Dividing a Decimal by a Power of 10

- Shift the decimal point to the left the same number of places as zeros in the power.
- Fill any gaps with zeros

Example 1: Evaluate

a) $10.8 \div 10 = 1.08$ b) $10.92 \div 100 = 0.1092$

$\overset{\cdot}{10}.8$

$\overset{\cdot}{10}.92$

c) $0.7 \div 100 = 0.07$ d) $1.15 \div 1000 = 0.00115$

$\overset{\cdot}{00}.7$

$\overset{\cdot}{000}1.15$

How do we divide a decimal by a whole number?

Dividing a Decimal by a Whole Number

- Set up the question like a normal division making sure the decimal points line up.

Example 2: Evaluate

a) $56.98 \div 7 = 8.14$

$$\begin{array}{r} 08.14 \\ 7 \overline{)56.98} \end{array}$$

b) $0.56 \div 9 = 0.062$

$$\begin{array}{r} 0.0622 \\ 9 \overline{)0.5620} \end{array}$$

c) $9.76 \div 400 = 9.76 \div 4 \div 100$
 $= 2.44 \div 100$
 $= 0.0244$

$$\begin{array}{r} 2.44 \\ 4 \overline{)9.76} \end{array}$$

How do we divide a decimal by a decimal?

Dividing a Decimal by a Decimal

- Multiply both numbers by a power of 10 so that you are dividing by a whole number.

Example 3: Evaluate

a) $3350 \div 0.005$

$= 3350 \div 5$
 $= 670$

$$\begin{array}{r} 670 \\ 5 \overline{)3350} \end{array}$$

b) $1052 \div 0.9$

$= 1052 \div 9$
 $= 116.8$

$$\begin{array}{r} 116.88... \\ 9 \overline{)1052000} \end{array}$$

Summary:

To divide decimals is basically the opposite of multiplying a decimal.

When dividing by a power of 10 we move the decimal point to the left as many as the number of zeros in the power.

When dividing by a whole number we set up the question like a normal division.

When dividing by another decimal we multiply both numbers by a power of 10 so that we are dividing by a whole number.

In conclusion there are many methods to dividing decimals.

Date: 7/4/14

Topic:

Percentages

How do we use percentages?

(Part 2)

How do we decrease or increase a quantity by a given percentage without using a calculator?

How do we increase or decrease a quantity by a given percentage using a calculator?

Increasing or Decreasing a Quantity by a Given Percentage

- It is important to know how to increase or decrease a value by a given percentage. This is especially true for the retail industry, where shops will often have sales where they discount their prices by a certain percentage.

Example 1: Increase 30cm by 20% without using a calculator.

$$20\% \text{ of } 30\text{cm} = \frac{20}{100} \times 30 = \frac{60}{10} = 6$$

$$30 + 6 = 36\text{cm}$$

Example 2: Using a calculator decrease \$45 by 14%.

$$14\% \text{ of } \$45 = \frac{14}{100} \times 45 = \frac{63}{10} = 6.30$$

$$45 - 6.30 = \$38.70$$

Summary:

Increasing or decreasing a quantity by a given percentage is very important to know especially in retail.

We can calculate these type of questions with a calculator or without a calculator.

Date: 7/5/12

Topic:

Algebra

What terminology is important in understanding the language of algebra?

What is algebra?

What are pronumerals and unknowns?

What are variables?

Algebra is the area of maths that deals with pronumerals. Pronumerals are letters or symbols we use for numbers we don't know. An unknown is the actual number that the pronumerals represent. A variable describes the unknown if its value can change.

How do we translate from everyday language to algebra language?

We can translate from everyday language into the language of algebra.

Example 1: Write the following situations using algebra.

a) Simon has x games for his XBOX. He buys 3 more games. How many games does he have now? $x + 3$

b) There are K cards in one pack. How many cards are in 4 packs? $K \times 4 = 4K$

c) There are d biscuits in a pack. Half are eaten. How many are left? $d \div 2 = d/2$

d) A kitchen cupboard has x plates and y bowls. If only a third of each is needed, how many will be used? $(x \div 3) + (y \div 3) =$

$$(x + y) \div 3$$

Summary:

Algebra is an area of maths. It involves pronumerals, unknowns, ~~var~~ and variables.

We can translate from everyday language to algebra language.

The terminology that is important in algebra is words such as variables, pronumerals, ~~var~~ and unknowns.

How do we correctly write expressions in algebra?

What are the 7 main rules of how to correctly write algebra?

To write things correctly in algebra there are a number of rules or conventions we must follow.

1) Leave out the multiplication signs

Example 1: a) $6 \times k = 6k$ b) $4 \times h \times y = 4hy$

2) Division signs are replaced by fraction bars.

Example 2: a) $a \div 2 = \frac{a}{2}$ b) $6 \div 9 = \frac{6}{9}$

3) Number written first, the letters in alphabetical order.

Example 3: a) $a \times 4 = 4a$ b) $9 \times y \times g = 9gy$

4) The number 1 is not written when multiplying.

Example 4: a) $1 \times 9 = 9$ b) $1 \times c \times a = ca$

5) Repeated addition can be written as multiplication.

Example 5: $y + y + y + y = 4y$

6) Brackets can be left out when using a fraction bar.

Example 6: $(a+b) \div 2 = \frac{a+b}{2}$

7) Repeated multiplication can be written as a power.

Example 7: $a \times a \times a = a^3$

Summary:

There are 7 main rules of algebra that need to be known in order to write things correctly.

The rules mainly include different ways to write the expressions or equations.

Topic: Algebra

What are like terms and how are they added and subtracted?

What is a coefficient?

The coefficient of an algebraic term is the number in front of it.

Example 1: What is the coefficient of the following terms.

a) $3a = 3$

b) $6xy = 6$

c) $k = 1$

What are like terms in algebra?

Like terms are algebraic terms that have exactly the same letters in them.

Example 2: Are the following pairs like terms?

a) $6a, 7a = \text{Yes}$ b) $k, 3k^2 = \text{No}$ c) $2xy, 5x = \text{No}$

d) $4mn, 3mn = \text{Yes}$ e) $2ay, 12ya = \text{Yes}$

f) $2ay, 12ya = \text{Yes}$

How do we collect terms?

We can simplify an expression by adding or subtracting like terms. This is called collecting like terms.

Example 3: Simplify the following. Check your answer by substitution.

a) $3y + 2y = 5y$

b) $7k - k = 6k$

c) $7mn - 2mn = 5mn$

subst. $y = 1$

subst. $k = 1$

subst. $m = 1, n = 2$

$3 \times 1 + 2 \times 1 = 5$

$7 \times 1 - 1 = 7 - 1$

$7 \times 1 \times 2 - 2 \times 1 \times 2 =$

$5 \times 1 = 5$

$= 6$ $6 \times 1 = 6$

$14 - 4 = 10 = 10 \div 2$

Summary

A coefficient is the number in front of the term. Like terms have exactly the same letters. We can collect like terms by simplifying an expression by adding or subtracting like terms.

Date: 21/5/14

Topic:

Algebra

How do we add and subtract algebraic expressions when there is more than one pair of like terms?

What are the steps to adding

and subtracting algebraic expressions

when there

are more

than one

pair of like

terms?

Steps:

- Remember the plus or minus sign belongs to the term after it.
- Rewrite question so that the like terms are grouped.
- Simplify by collecting like terms.

Example 1: Simplify the following

$$\text{a) } (8a) + 4(-2a) = 8a - 2a + 4 \\ = 6a + 4$$

$$\text{b) } (4x) + (3y) + (9x) + (2y) = 4x + 9x + 3y + 2y \\ = 13x + 5y$$

$$\text{c) } (6ab) - (4a) + (3ab) + (7a) = 6ab + 3ab - 4a + 7a \\ = 9ab - 3a$$

$$\text{d) } (4m) - (12n) - (5m) + (4n) = 4m - 5m - 12n + 4n \\ = -1m - 8n$$

$$\text{e) } (6k) - 2xy - (3k) + 2 = 6k - 3k - 2xy + 2 \\ = 3k - 2xy + 2$$

Summary:

To add and subtract algebraic expressions when there is then one pair of like terms we have to follow these steps that involve: rewriting the question so the like terms are grouped, collecting like terms and always remembering the sign belongs to the term after it.

If we do this we will complete questions correctly.

Date: 22/5/14

Topic:

Algebra

How do we simplify algebraic expressions involving multiplication?

Do we need to have like terms before we can multiply in algebra?

What are the steps that we need to follow in order to get the question correct?

Unlike addition and subtraction, we do NOT need like terms before we can multiply in algebra. To simplify algebraic expressions involving multiplication, follow the steps below, doing each one only if needed.

- 1) If there is more than 1 coefficient then multiply them together.
- 2) If there is only 1 coefficient then just write it down in your answer.
- 3) List the letters in alphabetical order.
- 4) Repeated multiplication of the same letter is written as a power.

Example 1: Simplify the following

a) $6 \times a = 6a$

e) $2p \times 3q = 6pq$

b) $a \times e \times y = aey$

f) $7 \times 8y = 56y$

c) $2 \times a \times 3 \times b = 6ab$

g) $3t \times 9t = 27t^2$

d) $m \times m = m^2$

h) $2ab \times 3a = 6a^2b$

Summary:

To simplify algebraic expressions involving multiplication we simply follow these 4 rules:

1. Multiply coefficients together
2. If only one coefficient it goes in the answer.
3. Write letters alphabetically.
4. Write repeated multiplication of same letter as a power.

Topic: Algebra

How do we divide algebraic expressions?

What steps do we need to follow in order to divide algebraic expressions correctly?

Steps:

- 1) Write the question as a fraction
- 2) Simplify the numbers if possible
- 3) Cancel any letters that are on the top and the bottom
- 4) If everything on top cancels, write the number 1 on top in your answer.
- 5) If there is only the number 1 left on the bottom then just write the top as your answer.

Example 1: Simplify

a) $n \div 2 = \frac{n}{2}$

b) $24k \div 6 = \frac{24k}{6}$
 $= 4k$

c) $30xy \div 5x = \frac{30xy}{5x}$
 $= 6y$

d) $2m \div 10 = \frac{2m}{10}$
 $= \frac{m}{5}$

e) $12m \div 15mt = \frac{12m}{15mt}$
 $= \frac{4}{5t}$

Summary:

There are 3 simple steps that we need to know to correctly divide in algebra.

First we write the question as a fraction and simplify the coefficients if possible. Then we cancel any letters if they appear on the top and bottom.