USING MATHEMATICS 3 (ACC 3)
Outcome 1

Exercise 1

You may use a calculator for this exercise
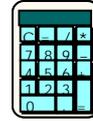
Reminders

When dealing with money on your calculator,

1.4 is one pound forty pence (**£1.40**)

0.2 is twenty pence (**£0.20**)

1.03 is one pound three pence (**£1.03**)

1 year   = 12 months

1 year   = 52 weeks

1 litre (**l**)   = 1000 millilitres (**ml**)

1 kilogram (**kg**)   = 1000 grams (**g**)

1 metre (**m**)   = 100 centimetres (**cm**)

Remember to write the **units** in your answer e.g. £, kg, metres,

If you get stuck - look up the Wordbank to help you.

Wherever possible - set out your working

1. Mr Jarvie pays his council tax in 10 equal payments.

   His total bill is £653.

   How much is each payment?

2. Mary is taking her 2 children to the cinema.

   a) Find the total cost of the tickets for
      Mary and her two children.

   b) How much change will Mary get from £20?

   XYZ Cinemas

   Prices

   Adults   £4.30

   Children   £2.40

3. Paula weighs 72.6 kg when she joins a slimming club.

   Her target weight is 64 kg.

   After 2 weeks Paula has lost 3.5 kg.

   a) What is Paula's weight now?

   b) How much does she still have to lose to reach her

      target weight?
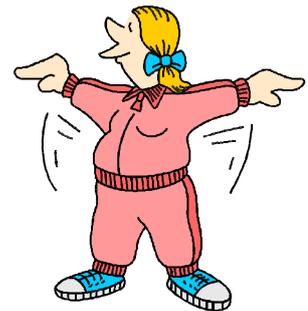
4. Emma Devine is a typist.

    She earns £14 400 each year.

    a) She earns the same amount each month.

       How much does she earn each month?

    b) Emma gets a pay rise and now earns £15 000 a year.

       How much does she now earn each month?

5. Tom, Steve and Derek played 4 games of golf in a competition.

    Here are their scores :

    Tom scored 74, 78, 69 and 75

    Steve scored 68, 82, 75 and 75

    Derek scored 72, 71, 74 and 76

    a) Work out the total score for each of the men.

       The person with the lowest total score is the winner.

    b) Who won the competition?

6. Kevin is buying tiles for his kitchen.

   He needs 252 tiles altogether.

   The tiles are sold in boxes of 12 .

   a) How many boxes of tiles will Kevin need to buy?

   Each box of tiles costs £8.25.

   b) How much will the tiles cost?

7. Sally is saving £6.50 each week to buy a jacket costing £58.50.

   a) How many weeks will Sally need to save to buy the jacket?

   Jane can save £9.75 each week.

   b) How many weeks will Jane need to save to buy the jacket?

8. In rugby, a team gets 5 points for each 'try'

   they score and 3 points for each 'penalty' they score.

   Tatton Rugby team had 6 'tries' and 4 'penalties'.

   How many points did they get altogether?

9. There are 12 boys and 16 girls in class 1B.

    They have to address 980 envelopes for a charity appeal.

    All pupils will address the same number of envelopes.

    How many will each pupil address?
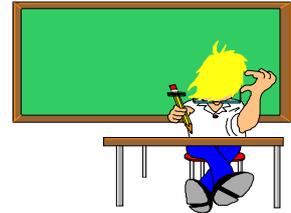
10. Deborah has £30.

    She buys 2 CDs which cost £12.95 each.

    How much money does she have left?

11. A dry cleaners offers the following range of prices:

    SUIT   £4.80
    JACKET   £3.60
    TROUSERS   £3.30
    COAT   £5.75
    DRESS   £3.55
    SKIRT   £3.45

    a) What would it cost to have a suit, one pair of trousers

       and a skirt cleaned?

    b) As a special offer the dry cleaners will clean

       '3 for the price of 2'

       with the **cheapest** of the three being cleaned free.

    How much would you save if you used this offer

    to have the suit, trousers and skirt cleaned?

Exercise 2

You may use a calculator for this exercise
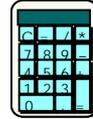
Examples:

1. In a sports shop sale everything is half price.

    The normal price of a football is £46.

    How much is the football in the sale?

    To find $\frac{1}{2}$ we divide by 2 , so

    $46 \div 2 = 23$

    The football is £23 in the sale.

2. A plank of wood is 3200 mm long.

    One fifth of it is sawn off.

    What length is left?

    To find $\frac{1}{5}$ we divide by 5, so

    $3200 \div 5 = 640$

    To find the length left, we subtract

    $3200 - 640 = 2560$

    There is 2560 mm of wood left.

Wherever possible - set out your working

1. In a survey of 1000 homes it was found that $\frac{1}{2}$ of all

   homes now have a computer.

   How many of the homes have a computer?

2. Of 760 families interviewed at Glasgow Airport,

   $\frac{1}{10}$ were about to travel abroad without insurance.

   How many families did not have insurance?

3. $\frac{1}{4}$ of all people now own a mobile phone.

   348 people were asked if they had a mobile phone.

   How many people would answer

   i) yes

   ii) no?

4. 600 people were asked whether they owned a pet.

   $\frac{1}{3}$ of those asked said they did have a pet.

   How many of those asked **did not** have a pet?

5. 850 pupils at Kilbrade Academy were asked if they take part in any of the school sports clubs. $\frac{1}{5}$ of the pupils take part. How many pupils **do not** take part in school sports clubs?

Example:

A box contains 40 chocolates.

Helen eats $\frac{3}{4}$ of the chocolates.

How many of chocolates   a) does Helen eat

                         b) does Helen leave in the box?

To find $\frac{3}{4}$, first find $\frac{1}{4}$ by **dividing by 4**

$40 \div 4 = 10$

then multiply by 3 to find $\frac{3}{4}$

$10 \times 3 = 30$

a) Helen eats 30 chocolates

To find how many chocolates are left in the box, we subtract

$40 - 30 = 10$,

b) there are 30 chocolates left in the box.

6. Of 3000 households surveyed $\frac{4}{5}$ of them own a car.

    How many of the households have a car?

7. Of 2420 homes surveyed, $\frac{3}{5}$ now have at least 2 TV sets.

    How many homes have at least 2 TV sets?

8. 534 people were asked if they ever had trouble sleeping.
    $\frac{2}{3}$ of those asked said that they never have trouble sleeping.

    How many of the 534 people **do** have trouble sleeping?

9. $\frac{3}{5}$ of the 400 adults who filled in a holiday survey said that they preferred to

    take a holiday abroad.

    How many of those who filled in the survey prefer to holiday in Britain?

10. In a national survey, 1220 primary schools were asked whether they were

    connected to the internet. $\frac{7}{10}$ of the schools are connected to the internet.

    How many schools have still to be connected to the internet?

Exercise 3

You may use a calculator for this exercise
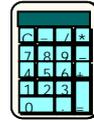
Reminders

In the last unit you learned that

$$1 = 100\%$$

$$\frac{1}{4} = 25\%$$

$$\frac{1}{10} = 10\%$$

$$\frac{1}{2} = 50\%$$

$$\frac{1}{5} = 20\%$$

$$\frac{3}{4} = 75\%$$

Where a percentage is easily changed into a fraction (like those listed above) we can use the method shown below to find a percentage of a quantity.

Examples

1. Find 50 % of £60

    we change 50% to the fraction $\frac{1}{2}$ and then find $\frac{1}{2}$ of £60

    $\frac{1}{2}$ x £60 = 60 ÷ 2 = £30

2. Find 20 % of 380 kg

we change 20% to the fraction $\frac{1}{5}$ and then find $\frac{1}{5}$ of 380 kg

$\frac{1}{5}$ x 380 kg $=$ 380 $\div$ 5 = 76 kg

Wherever possible - set out your working

1. Find 25% of 2800g.

2. 50 % of the pupils at Carhead High School play a sport.

   There are 642 pupils at Carhead High School.

   How many pupils play a sport?

3. Mary took part in a quiz.

   She had to answer 40 questions.

   She got 20% of them wrong.

   How many questions did Mary get wrong?

4. 10% of the children in Primary 1 at Rother Primary are able to swim.

   There are 30 pupils in the Primary 1 class.

   How many of these pupils can swim?

5. 75% of customers in a supermarket use cash to pay for their shopping.

   On Saturday the supermarket had 2800 customers.

   How many of the customers paid cash for their shopping?

Exercise 4

You may use a calculator for this exercise
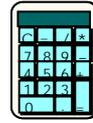
Reminders

We can also find any percentage of a quantity

Examples :

1. 12% of 200

    Using your calculator

    200 ÷ 100 × 12

    Answer = 24

2. 32% of £280

    Using your calculator

    280 ÷ 100 × 32

    Answer = £89.60

Wherever possible - set out your working

Find:

1. 15% of £70

2. 60% of 60 km

3. 24% of £310

4. 31% of 4000 kg

5. 55% of 200 people

6. 96% of £322

7. 14% of 1540 m

8. 43% of 200 days

9. 72% of 1200 ml

10. 88% of 575 pupils

11. 58% of the pupils in first year have brown hair.

There are 150 pupils in first year.

How many first year pupils have brown hair?

12. Amanda spends 90 minutes at the gym.

30% of her time is spent on the running machine.

How long does she spend on the running machine?

13. A can of lemonade holds 330 ml.

Special offer cans give 15% extra free.

How much more do the special offer cans hold?

14. Alex's new car costs £10 200.

He has to pay 8% of this amount as a deposit.

How much is the deposit?

15. Tariq spends 11% of his monthly salary on food.

    He earns £1860 each month.

    How much does Tariq spend on food each month?
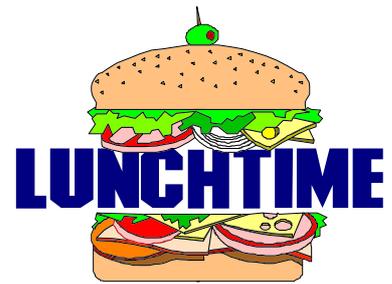
Exercise 5

You may use a calculator for this exercise
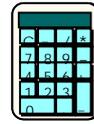
Examples:

1. A tennis racquet usually costs £46.20.

    In the sale it is reduced by 15%.

    What is the sale price of the tennis racquet?

    Using your calculator

    46.20 ÷ 100 × 15 = 6.93

    The racquet is reduced by £6.93

    To find the sale price we **subtract**

    46.20 - 6.93 = 39.27

    The racquet costs £39.27 in the sale.

2. This bottle usually contains 500 ml of cola.

   On special offer, it has another 35% extra free.

   How much does the special offer bottle contain?

   Using your calculator

   500 ÷ 100 × 35 = 175

   The amount is increased by 175

   To find the amount of cola in the special offer bottle we add

   500 + 175 = 675

   The special offer bottle holds 675 ml.

Wherever possible - set out your working

1. 32 % of the children in a school bring a packed lunch with them each day.

   There are 375 pupils in the school.

   a) How many pupils bring a packed lunch?

   b) How many pupils do not bring a packed lunch?
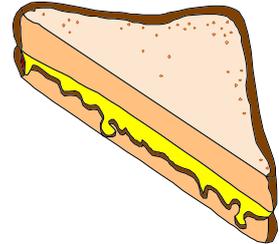
2. All the prices in the sports shop have been reduced by the percentages shown.

   What is the sale price of each of these items?

   Rugby Shirt ....was £42.00   now reduced by 15%

   Ski Boots   ....were £120.00   now reduced by 40%

   Rucksack   ....was £23.50   now reduced by 30%

3. When Frank exercises at the gym, his pulse rate increases by 28%.

   His pulse rate is usually 75 beats per minute.

   What does his pulse rate increase to when he exercises?

4. A holiday company surveyed 3000 people.

   19% took a holiday abroad in the last 12 months.

   How many people took a holiday abroad in the last year?

5. In the same survey the 3000 people were asked if they had been ill while on holiday.

   12% of those surveyed had been ill.

   How many people had been ill while on holiday?
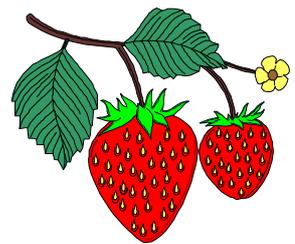
6. Safestart Supermarket sells boxes of strawberries.

   There are 500g in each box.

   This month's special offer gives 500g plus 33% extra free.

   What weight is the box of special offer strawberries?