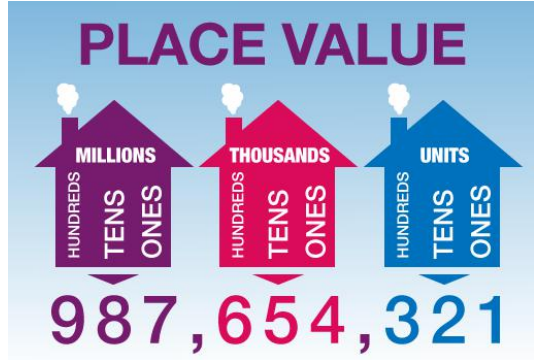


Activity 1: Answers

The columns begin from the right with units (or 'ones') then tens then hundreds. We read from the left, starting at the largest number.



1. Write 4,025 in words.

Th H T U ('U' for units or 'ones')

4 0 2 5
Four thousand and twenty five

Write the numbers under the place value columns to guide you.
 There is a 4 in the thousands column so we write 4 thousand, nothing in the hundreds so we move on to the tens and then the units.

2. Write six thousand, four hundred and seventy-two in figures.

Th H T U

Six four seven two

6,472

Write the words under the place value, and then write the figures in.

3. Here are the results of an election to be school governor at Hawthorn School:

- 1. John Smith: 436 votes
- 2. Sonia Cedar: 723 votes
- 3. Pat Kane: 156 votes
- 4. Anjali Seedher: 72 votes

Who won the election?

The winner is the person with the most votes. To find the biggest number we compare the value of the first digit in each number (if this is the same for any of them we then compare the value of the second digits, and so on).

HTU

The value of the first digit in 4 3 6 is 4 hundreds (400)

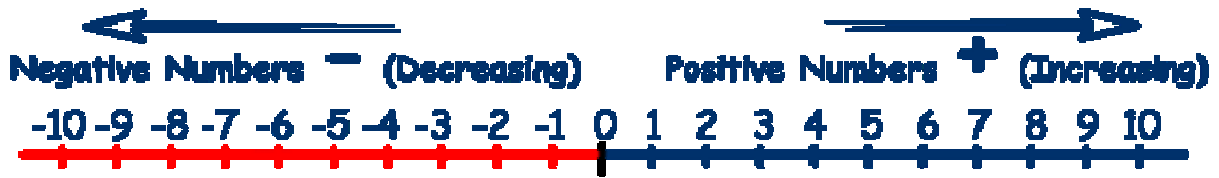
The value of the first digit in 7 2 3 is 7 hundreds (700)

The value of the first digit in 1 5 6 is 1 hundred (100)

The value of the first digit in 7 2 is 7 tens (70)

The biggest number is 723 so Sonia Cedar is the winner.

Activity 2: Answers



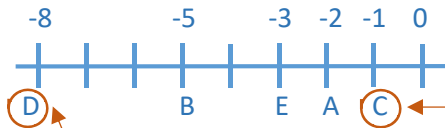
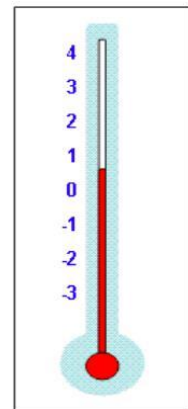
A number line can help when working with negative numbers. When you **add** you go **up**, and when you **subtract**, you go **down**. Think of temperatures getting warmer or colder.

1. The following table shows the temperatures in several cities on one day.

- Which are the coldest and warmest cities?

City	Temperature
A	-2°C
B	-5°C
C	-1°C
D	-8°C
E	-3°C

Draw a quick number line using the numbers in the question and '0' to keep your place.

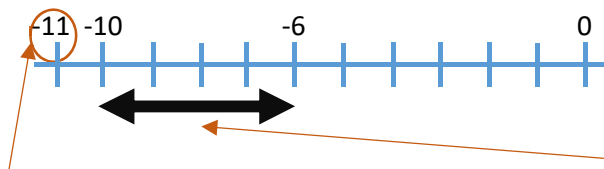


City D is the coldest because -8 is the lowest temperature.

City C is the warmest because -1 is the highest temperature.

2. A particular brand of ice cream includes the following note in its storing instructions: *For best results, store in temperatures between -10°C and -6°C*

- If your freezer's temperature was -11°C , would it be OK to keep this ice cream in it?



Important information given in the question

No, because -11°C is colder than -10°C so it is outside of the range of between -10°C and -6°C

Activity 3: Answers



1. Look at this newspaper headline:

a. Write down the number in the millions column.

M, Hth Tth Th, H T U

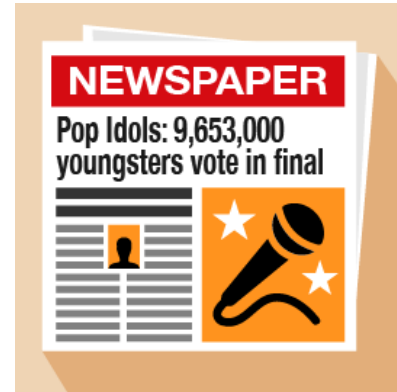
9, 6 5 3, 0 0 0

Write the numbers under the columns for place value.

9 is in the millions column so the answer is **9,000,000**

b. Write down the number in the thousands column.

3 is in the thousands column. **3,000.**



c. Look at the details below. Who won the *Pop Idols* competition?

- Will: 4,850,000 votes
- Gareth: 4,803,000 votes

M, Hth Tth Th, H T U

Will: 4, 8 5 0, 0 0 0

Gareth: 4, 8 0 3, 0 0 0

To find the biggest number we compare the value of the first digit in each number (if this is the same for any of them we then compare the value of the second digits, and so on).

The value of the first digit in both numbers is 4 millions (4,000,000)

The value of the second digit in both numbers is 8 hundred thousands (800,000)

The value of the third digit in 4,850,000 is 5 ten thousands (50,000)

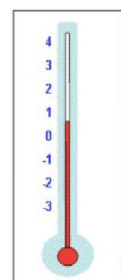
The value of the third digit in 4,803,000 is 0 ten thousands (0)

The biggest number is 4,850,000 so **Will** is the winner.

2. Look at the data in the following table. It gives the temperatures of five cities on a Monday in January.

City	Temperature
London	0°C
Paris	-1°C
Madrid	10°C
Delhi	28°C
Moscow	-10°C

Draw a number line (see activity 2). Remember that -2 is colder than -1 because it is further away from '0'.



- a. Which city was the coldest? **Moscow**
- b. Which city was the warmest? **Delhi**
- c. How many cities have a temperature below 5°C? **3** (London, Paris, Moscow)

3. You buy a jumper for £24 and a skirt for £18. How much do you spend altogether?

Add the two amounts together. Use any method you know; I have used column addition.

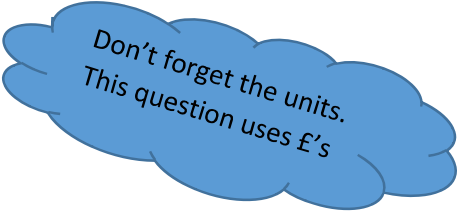
T U	
	2 4
+	1 8
	4 2
(1)	

STEP 1: Line the numbers up under the correct columns for tens, units etc.

STEP 2: Start adding each column in turn from the right. 4+8 is 12 which is 2 units and 1 ten. Write down the units and carry the ten/s over to add to the other tens.

STEP 3: Add the next column. 2+1 is 3 then add the 1 you carried over so you write 4 in the tens column.

£24 + £18 = £42



4. You have £48. You spend £26. How much do you have left?

You are subtracting here because you spent money, which reduces what you have left.

T U	
	4 8
-	2 6
	2 2

STEP 1: Line the numbers up under the correct columns for tens, units etc.

STEP 2: Subtract the bottom number from the top number in each column in turn from the right. 8-6 is 2 units.

STEP 3: Subtract the next column. 4-2 is 2.

£48 - £26 = £22

Activity 4: Answers

You can use a calculator in this activity.

1. What are the answers to these sums?

a. $6 \times 4 = 24$

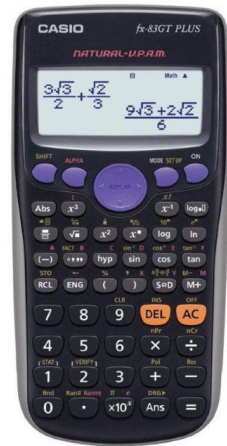
b. $3 \times 9 = 27$

c. $5 \times 7 = 35$

d. $36 \div 9 = 4$

e. $48 \div 6 = 8$

f. $15 \div 3 = 5$



2. Wine glasses come in boxes of 10. There are 25 boxes in a crate. How many wine glasses are there in one crate?

$10 \times 25 = 250$

3. A circus is selling tickets at £19 for adults and £11 for children. How much would it cost for two adults and two children to go?

2 adult tickets: $2 \times 19 = 38$

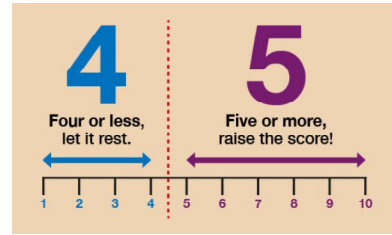
2 child tickets: $2 \times 11 = 22$

Add them together $38 + 22 = 60$

It costs **£60**

Don't forget the units.
This question uses £'s

Activity 5: Answers



Step 1: Identify the **digit you are rounding** – it will either stay the same or be raised by 1.

Step 2: To decide, look at the digit to the right of it – is it 5 or more?

Step 3: If yes, raise the **digit you are rounding** by 1. If no, leave the **digit you are rounding** as it is.

Step 4: Replace all digits to the right of the one you are rounding with 0's.

1. Round these numbers to the nearest 10:

a. 64

T U

6 4

Step 1: The **tens** digit is '6'. It will stay as 6 or be raised to 7.

Step 2: The digit to the right of it is '4' – is it 5 or more?

Step 3: No, '4' is not 5 or more so the '6' stays as '6' tens.

Step 4: Replace the '4' with a '0' so the answer becomes '60'.

64 to the nearest 10 = **60**

b. 69

Step 1: The **tens** digit is '6'. It will stay as 6 or be raised to 7.

Step 2: The digit to the right of it is '9' – is it 5 or more?

Step 3: Yes, '9' is 5 or more so the '6' is raised to '7' tens.

Step 4: Replace the '9' with a '0' so the answer becomes '70'.

69 to the nearest 10 = **70**

c. 65 to the nearest 10 = **70**

Here **step 3** gives an answer of yes, '5' is 5 or more, so the tens digit is raised by 1 or 'rounded up'.

2. Round these numbers to the nearest 100:

a. 325

H T U

3 2 5

Step 1: The **hundreds** digit is '3'. It will stay as 3 or be raised to 4.

Step 2: The digit to the right of it is '2' – is it 5 or more?

Step 3: No, '2' is not 5 or more so the '3' stays as '3' hundreds.

Step 4: Replace the '2' and '5' with '0's so the answer becomes '300'.

325 to the nearest 100 = **300**

b. 350 to the nearest 100 = 400

c. 365 to the nearest 100 = 400

Here, **step 3** gives an answer of yes, it is 5 or more, so the hundreds digit is raised by 1 or 'rounded up' to '4'.

3. Round these numbers to the nearest 1,000:

a. 4,250

Th HT U

4, 2 5 0

Step 1: The **thousands** digit is '4'. It will stay as 4 or be raised to 5.

Step 2: The digit to the right of it is '2' – is it 5 or more?

Step 3: No, '2' is not 5 or more so the '4' stays as '4' thousands.

Step 4: Replace the '2' and '5' (and the '0' if it had not already been a '0') with '0's so the answer becomes '4000'.

4250 to the nearest 1000 = 4000

b. 4,650 to the nearest 1000 = 5000

c. 4,500 to the nearest 1000 = 5000

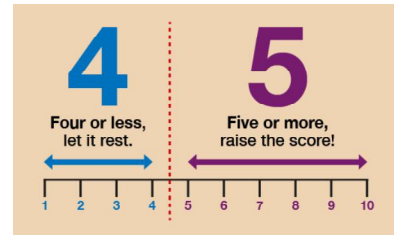
Here, **step 3** gives an answer of yes, it is 5 or more, so the thousands digit is raised by 1 or 'rounded up' to '5'.

d. 4,060 to the nearest 1000 = 4000

Here, for **step 3** you have '0' for the hundreds digit. This is worth zero hundreds which comes under '4 or less'. ***Don't be tempted to skip over the '0' to the next number.**

Activity 6: Answers

MY SHOPPING LIST	
British beef mince	£2.20
Eight thick beef sausages	£1.24
Thick sliced white loaf	72p
Pasta (500g)	79p
Corn flakes	£1.78
Chocolate biscuits	£1.29
Milk (6 pints)	£2.12
Potatoes	£1.98
Tomatoes	69p
Bananas	90p
Apples	£1.49
Coffee	£4.13



1. Bill has £20 to spend on his shopping. Here's a list of the items he selects, along with how much they cost. Use your rounding skills to work out whether Bill has enough money to pay for all of his shopping.

Round each amount (to the nearest £ makes sense) and add them.



£1.00 is 100 pence so we are rounding our pennies to the nearest hundred.

Example: British beef mince

£2.20 = 220 pence

H T U

2 2 0

Step 1: The **hundreds** digit is '2'. It will stay as 2 or be raised to 3.

Step 2: The digit to the right of it is '2' – is it 5 or more?

Step 3: No, '2' is not 5 or more so the '2' stays as '2' hundreds.

Step 4: Replace the tens and units with '0's so the answer becomes '200'.

£2.20 to the nearest £1.00 = **£2.00**

Example: Thick white sliced

loaf 72p = £0.72 in £

H T U

0 7 2

Step 1: The **hundreds** digit is '0'. It will stay as 0 or be raised to 1.

Step 2: The digit to the right of it is '7' – is it 5 or more?

Step 3: Yes, '7' is 5 or more so the '0' is raised to '1' hundred/s.

Step 4: Replace the tens and units with '0's so the answer becomes '100'.

£0.72 to the nearest £1.00 = **£1.00**

Rounding all of the items gives us $2 + 1 + 1 + 1 + 2 + 1 + 2 + 2 + 1 + 1 + 1 + 4 = 19$ **£19.00**



Don't forget the question – does he have enough? He has £20 so **yes** he probably has.

2. Can you total all of the items on the shopping list to see what the actual cost of Bill's shopping is?

£ . T U

2 . 2 0

1 . 2 4

. 7 2

. 7 9

1 . 7 8

1 . 2 9

2 . 1 2

1 . 9 8

. 6 9

. 9 0

1 . 4 9

4 . 1 3

19 . 3 3

6 6

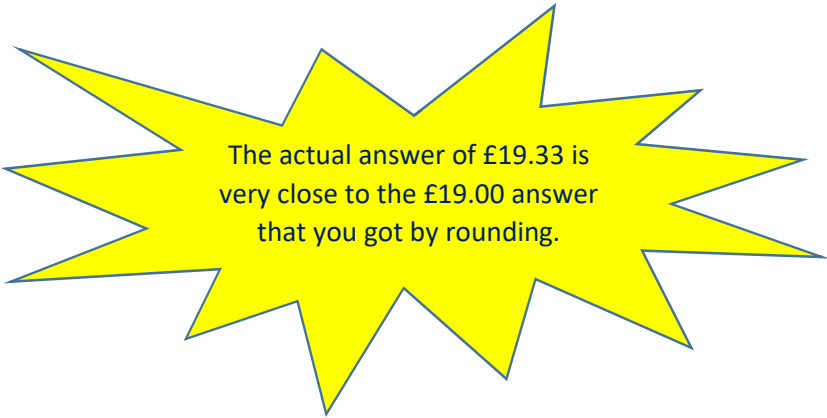
STEP 1: Line the numbers and decimal points up correctly. Make sure the point is in the same place for each amount.

STEP 2: Start adding each column in turn from the right. The units add to 63 which is 3 units and 6 tens. Write down the units and carry the 6 tens over to add to the other tens.

STEP 3: Add up the next column. The tens add to 57 then add the 6 you carried over. This makes 63 tens altogether which is 3 tens and 6 hundreds. Again, write the 3 in the tens column and carry the 6 over to add to the other hundreds.

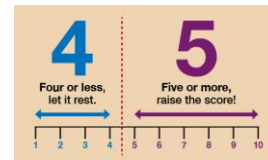
STEP 4: Add up the next column. The £'s add to 13 then add the 6 you carried over. This makes 19 £'s altogether. Because there are no more columns to add up, you can just write in the 19 without having to carry anything over to the next column.

The actual cost of the shopping is £19.33



The actual answer of £19.33 is very close to the £19.00 answer that you got by rounding.

Activity 7: Answers



Key word 'approximate' means round each amount .



If the question does not tell you what to round to, look at the value of the first digit, for example with 365 the first digit is 3 hundreds, so round to the nearest hundred.

1. The population of a city is 6,439,800. **Round** this number to the nearest million.

M, Hth Tth Th, HTU

6, 4 3 9, 8 0 0

6,439,800 to the nearest million is **6,000,000**.

Step 1: The **millions** digit is '6'. It will stay as 6 or be raised to 7.

Step 2: The digit to the right of it is '4' – is it 5 or more?

Step 3: No, '4' is not 5 or more so the '6' stays as '6' millions.

Step 4: Replace the rest with 0's so the answer is '6,000,000'.

2. Tickets to a concert cost £6 each. 6,987 tickets have been sold. **Approximately** how much money has been collected?

Th, HTU

6, 9 8 7

- The first digit in 6,987 is worth **6 thousands** so round it to the nearest thousand.
- 6,987 to the nearest thousand is **7,000**
- $7,000 \times 6 = 42,000$
- **£42,000** *remember the £ sign

3. 412 students passed their Maths GCSE this year at Longfield High School. 395 passed last year. **Approximately** how many students passed GCSE Maths over the last two years?

- 412 to the nearest hundred is **400**
- 395 to the nearest hundred is **400**
- $400 + 400 = 800$
- **800 students**

4. **Four** armchairs cost £595. What is the **approximate** cost of one armchair?

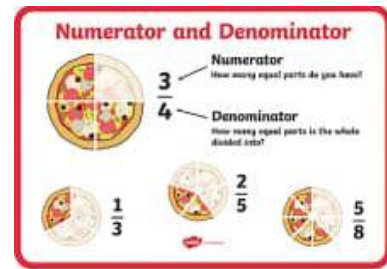
- 595 to the nearest hundred is **600**
- Divide by 4 to find the cost of one armchair.
- $600 \div 4 = 150$
- **£150**

$$\begin{array}{r} 150 \\ 4 \overline{) 600} \end{array}$$

5. A box contains 18 pencils. A company orders 50 boxes. **Approximately** how many pencils is that?

- 18 to the nearest ten is **20** (50 is already to the nearest ten)
- $20 \times 50 = 1000$
- **1000 pencils**

Activity 8: Answers



1. Put these fractions in order of size, with the smallest first:

$$\frac{1}{2} \quad \frac{1}{4} \quad \frac{3}{8} \quad \frac{3}{4}$$



It's easier to compare these fractions if we need make the denominators the same.



Find the lowest common multiple of all the denominators (on the bottom of the fractions).

STEP 1: The denominators are **2, 4** and **8**.

STEP 2: What is the lowest multiple of those? (a number that is a multiple of 2 and also a multiple of 4 and a multiple of 8) It's **8**. *If you're not sure, write down the times table of the smallest number until you find one that is also a multiple of the others – 2,4,6,8*

STEP 3: 8 will be the common denominator we use to compare our fractions. $\frac{1}{2}$ already has 8 as its denominator but we will need to make the others into equivalent fractions.



Equivalent fractions – do the same to the numerator as you do to the denominator.

- To turn $\frac{1}{2}$ into a fraction with 8 as the denominator what do we need to do to the '2' that is currently the denominator to make it 8? Multiply by 4 because $2 \times 4 = 8$.

Do the same to the numerator. $\frac{1}{2} \times 4 = \frac{4}{8}$

- Next, what do we multiply the denominator, 4, of $\frac{3}{4}$ by to make 8? $4 \times 2 = 8$ $\frac{3}{4} \times 2 = \frac{6}{8}$

- The final fraction $\frac{3}{8}$ also has denominator 8 so $\frac{3}{8} \times 1 = \frac{3}{8}$

STEP 4: Now we have 4 fractions with the same denominator we can order them from **smallest to largest** by putting their numerators in order.

$$\frac{2}{8}, \frac{3}{8}, \frac{4}{8}, \frac{6}{8}$$

To answer the question, put the original fractions in order. Go back and check which was which before you changed them.

STEP 5: in order from **smallest to largest**.

$$\frac{1}{4}, \frac{3}{8}, \frac{1}{2}, \frac{3}{4}$$

2. What should you replace the question marks with to make these fractions equivalent?

$$\frac{1}{3} = \frac{?}{6}$$
$$\frac{1}{4} = \frac{?}{8}$$
$$\frac{1}{5} = \frac{?}{10}$$
$$\frac{1}{2} = \frac{?}{10}$$



Equivalent fractions – do the same to the numerator as you do to the denominator.

As with the previous question, look at both denominators and work out what the multiplier is, and then do the same multiplication to the numerator.

$3 \times 2 = 6$ so the multiplier is 2

$$\frac{1}{3} \times 2 = \frac{2}{6}$$

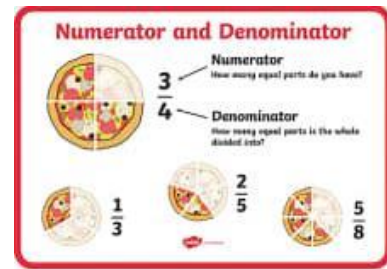
$$\frac{1}{3} \times 2 = \frac{2}{6}$$

$$\frac{1}{4} \times 2 = \frac{2}{8}$$

$$\frac{1}{5} \times 2 = \frac{2}{10}$$

$$\frac{1}{2} \times 5 = \frac{5}{10}$$

Activity 9: Answers



1. Put these fractions in order of size, **smallest** first:

$$\frac{1}{6}, \frac{3}{10}, \frac{1}{3}, \frac{11}{15}, \frac{2}{5}$$

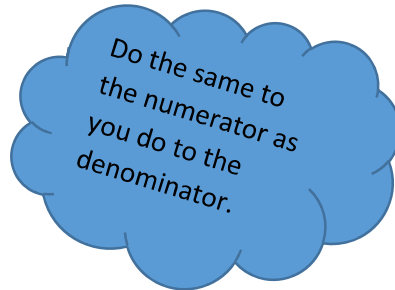
Following the steps from Activity 8:

STEP 1: The denominators are **3, 5, 6, 10** and **15**.

STEP 2: Lowest common denominator is **30**.

STEP 3: Find equivalent fractions for our fractions to give them 30 as denominator.

- $\frac{1}{6} \times 5 = \frac{5}{30}$
- $\frac{3}{10} \times 3 = \frac{9}{30}$
- $\frac{1}{3} \times 10 = \frac{10}{30}$
- $\frac{11}{15} \times 2 = \frac{22}{30}$
- $\frac{2}{5} \times 6 = \frac{12}{30}$



STEP 4: Order those from **smallest to largest** by putting their numerators in order.

$$\frac{5}{30}, \frac{9}{30}, \frac{10}{30}, \frac{12}{30}, \frac{22}{30}$$

To answer the question, put the original fractions in order.

STEP 5: in order from **smallest to largest**.

$$\frac{1}{6}, \frac{3}{10}, \frac{1}{3}, \frac{2}{5}, \frac{11}{15}$$

2. Put these fractions in order of size, **smallest** first:

$$\frac{3}{10}, \frac{4}{5}, \frac{2}{15}, \frac{1}{6}$$

This question is similar to question 1. Once you have your equivalent fractions, the correct order for the original fractions is:

$$\frac{2}{15}, \frac{1}{6}, \frac{3}{10}, \frac{4}{5}$$

Activity 10: Answers



A family plans to have its kitchen extended.

The cost of this project is **£12,000**.

The builder they have chosen to carry out this job has asked for the money to be paid in stages:

Stage 1: $\frac{1}{4}$ of the money to be paid before starting the project.

Stage 2: $\frac{1}{2}$ of the money to be paid a month later.

Stage 3: The remainder to be paid when the extension has been built.

How much is the builder asking for during **Stage 1** and **Stage 2**?

Fraction of an amount – Divide by denominator, multiply by numerator

Stage 1

$$\frac{1}{4} \text{ of } 12,000 = \underline{3,000}$$

$$\begin{aligned} \text{Because } 12,000 \div 4 &= 3,000 \\ 3,000 \times 1 &= 3,000 \end{aligned}$$

Stage 2

$$\frac{1}{2} \text{ of } 12,000 = \underline{6,000}$$

$$\begin{aligned} \text{Because } 12,000 \div 2 &= 6,000 \\ 6,000 \times 1 &= 6,000 \end{aligned}$$

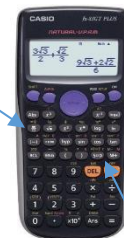
$$\frac{\text{numerator} \quad 2}{\text{denominator} \quad 5}$$

(number of parts we have) (total parts in whole)

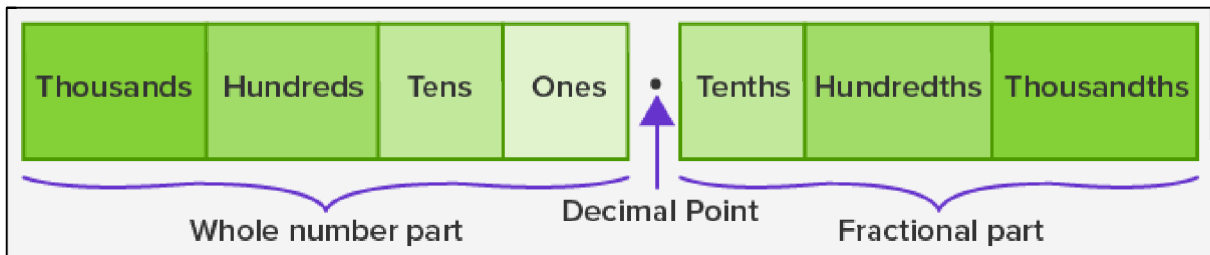


If using a Casio calculator, the fraction button is here

- Press the fraction button
- Type in the numerator
- Press the 'down' arrow to move down
- Type in the denominator
- Press the 'right' arrow to move out of the fraction
- Press 'x' to multiply then type in the amount
- Press = to get your answer.
- If your answer is a fraction and you want a decimal, press the S-D button



Activity 11: Answers



1. Four children are taken to the funfair. One of the rides, the Wacky Wheel, has the following notice on it: For safety reasons, children must be over **0.95 m** tall to go on this ride.

- Margaret is 0.85 m tall.
- David is 0.99 m tall.
- Suha is 0.89 m tall.
- Prabha is 0.92 m tall.

If there is no whole number before the decimal, a '0' sits in the units place before the decimal point.

Who is allowed to go on the ride?

	U	.	T th	H th
Margaret:	0	.	8	5
David:	0	.	9	9
Suha:	0	.	8	9
Prabha:	0	.	9	2

Write the numbers under the place value columns to guide you.

To ride the Wheel they must be **more than 9 tenths** and **5 hundredths** tall.

Margaret and Suha are only **8 tenths** tall so they are too short.

David is **9 tenths** and **9 hundredths** tall so he is tall enough.

Prabha is **9 tenths** but is only **2 hundredths** so is not tall enough.

Only **David** is allowed.

2. Six athletes run a race. Their times, in seconds, are as follows:

- Sonia 10.95
- Anjali 10.59
- Anita 10.91
- Aarti 10.99
- Sita 10.58
- Susie 10.56

The winners have the **fastest** times, so we are comparing the numbers to find the **smallest**. Start with the value of the first digit in each number (if this is the same for any of them we then compare the value of the second digits, and so on).

Who gets the gold, silver and bronze medals?

	T	U	.	T th	H th
Sonia	1	0	.	9	5
Anjali	1	0	.	5	9
Anita	1	0	.	9	1
Aarti	1	0	.	9	9
Sita	1	0	.	5	8
Susie	1	0	.	5	6

- The value of the first digit in all numbers is **1 ten** (10)
- The value of the second digit in all numbers is **0 units** (0)
- Looking at the third digit, **five tenths** (0.5) is the smallest value and there are three of those (**Anjali, Sita, Susie**) so we will need to compare the hundredths for those three athletes.
- Anjali scored **9 hundredths** (0.09)
- Sita scored **8 hundredths** (0.08)
- Susie scored **6 hundredths** (0.06)
- Susie's is the smallest score, followed by Sita then Anjali.

The medals are awarded to:

Gold – Susie (10.56)

Silver – Sita (10.58)

Bronze – Anjali (10.59)

3. In a gymnastics competition, the following points were awarded to four competitors. Who came first, second and third?

- Janak 23.95
- Nadia 23.89
- Carol 23.98
- Tracey 23.88

We are looking for the most points, so the **highest** amounts.
 ✓ They all have the same tens and units so compare the decimals.

	T	U	.	T th	H th
Janak	2	3	.	9	5
Nadia	2	3	.	8	9
Carol	2	3	.	9	8
Tracey	2	3	.	8	8

- All the scores have the same number of **tens** and **units**. Looking at the **tenths**, two scores (23.95 and 23.98) have **9 tenths** so they are the highest two. If you compare the **hundredths** in these two numbers, you can see that 23.98 is bigger than 23.95 so **Carol** is first and **Janak** is second.
- To find the third highest number, go back to the other two numbers, 23.89 and 23.88. Comparing the **hundredths**, you can see that 23.89 is the higher number, so **Nadia** scored more than Tracey.
- Therefore, the top three competitors are: Carol, Janak and Nadia.

- First - **Carol** (23.98)
- Second - **Janak** (23.95)
- Third - **Nadia** (23.89)

Activity 12: Answers

1. Work out approximate answers to these by rounding each decimal number to the nearest whole number:

A. $3.72 + 8.4$

$3.72 = 4$ to the nearest whole number

Look at the numbers after the decimal to see if you are rounding up/down

$8.4 = 8$ to the nearest whole number

$4 + 8 = 12$

B. $9.6 - 1.312$

$10 - 1 = 9$

C. 2.8×3.4

$3 \times 3 = 9$

D. $9.51 \div 1.5$

$10 \div 2 = 5$

2. Round the following numbers to two decimal places (2dp):

a. 3.846

When rounding to 2dp, look at the second number after the decimal point.

You then need to look at the number after that to decide if you are rounding up or stay the same.

3.846 rounded to 2dp = 3.85

b. 2.981

2.981 rounded to 2dp = 2.98

c. 3.475

3.475 rounded to 2dp = 3.48

Remember when rounding:
If the number you are rounding is followed by 5, 6, 7, 8 or 9 round the number up
If the number you are rounding is followed by 0, 1, 2, 3 or 4, round the number down

Activity 13: Answers

1. You buy a box of corn flakes for £2.65 and a bottle of milk for £1.98. a. What is the total cost of these items?

You need to add both costs together

$$£2.65 +$$

$$£1.98$$

$$£4.63$$

Keep the decimal points in line

- b. You pay for them with a £5 note. How much change should you get?

$$\begin{array}{r} £ \cancel{4}^4 . \cancel{9}^9 \cancel{0}^0 \\ - £ 4 . 6 3 \\ \hline £ 0 . 3 7 \end{array}$$

Because you cannot minus 3 away from 0 means, you have to borrow from the number next to it. If that number happens to be a 0, you will have to do the same again.

You may have used a different method to work this out

2. You go on holiday to Italy. The rate of exchange is £1 = €1.4. How many euros do you get for £8?

$$€1.4 \times £8 = €11.20$$

3. You go out for a meal with three friends, and the total cost of the meal is £56.60. You decide to split the bill equally. How much do each of you pay?

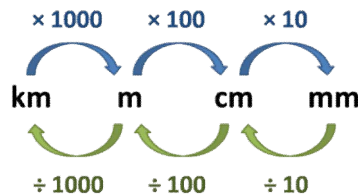
$$\begin{array}{r} 14.15 \\ 4 \overline{) 56.60} \end{array}$$

Therefore, each person will pay £14.15

4. Convert 6.25 m to cm.

$$1\text{m} = 100\text{cm}$$

$$6.25 \times 100 = 625\text{cm}$$



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Activity 14: Answers

1. The same diamond ring is being sold at different prices, and with different percentage discounts, in two different shops.

Which shop offers the better deal?

Shop A

To find 10%

$$£500 \div 10 = £50$$

To find 5%

$$10\% = £50$$

$$\div 2 \quad \div 2$$

$$5\% = £25$$

To find 25%

$$2 \times 10\% = 2 \times £50$$

$$= £100$$

+

$$5\% = £25$$

$$£100 + £25 = £125$$

We now need to take the discount off the original price

$$£500 - £125 = £375$$

Shop B

To find 10%

$$£400 \div 10 = £40$$

We now need to take the discount off the original price

$$£400 - £40 = £360$$



Do not forget to state which shop has the better deal

Shop B is the better deal

Activity 15: Answers

WHAT IS DEPRECIATION?

➤ Depreciation is the difference between a car's value when you buy it and when you come to sell it.

1. You buy a car for £9,000. Its value depreciates (decreases) by 25% annually. How much will the car be worth at the end of the first year?

Find 10 %

$$£9,000 \div 10 = £900$$

Find 5%

$$10\% = £900$$

$$\div 2 \quad \div 2$$

$$5\% = £450$$

Workout 25%

$$2 \times 10\% = 2 \times £900$$

$$= £1800$$

+

$$5\% = £450$$

$$25\% = £1800 + £450 = £2250$$

The car's value depreciates by £2,250 in the first year, so the value of the car at the end of the first year is

$$£9000 - £2250 = £6750$$

Hint: Do not forget to work out how much the car will be worth after the first year

2. Since the start of the 21st century, the shares in the InstaBank have risen by 30%. If the price of one share was £10 in 2000, what is it worth now?

Find 10 % of £10

$$£10 \div 10 = £1$$

$$30\% = 3 \times 10\% = 3 \times £1$$

$$= £3$$

The share value has increased by £3, so the current value of the share is

$$£10 + £3 = £13$$

Activity 16: Answers

Tip: when finding a fraction of an amount, divide by the bottom (Denominator) multiply by the top (Numerator)

1. What is 20% of £600?

To find 10% or 20% is the equivalent to $\frac{1}{5}$
 $£600 \div 10 = £60$ $\frac{1}{5}$ of £600 = $£600 \div 5$
 $20\% = 2 \times 10\% = 2 \times £60$ **= £120**
= £120

2. If you walked 0.25 km each day, what fraction of a kilometer have you walked?

0.25 is equivalent to $\frac{1}{4}$
 1km is equivalent to 1000m
 $\frac{1}{4}$ Of 1000m = $1000 \div 4$
 = 250m
So walking 0.25km is the same as walking $\frac{250}{1000}$, simplified to $\frac{25}{100}$ or $\frac{1}{4}$

1 km = 1000 m
1 m = 100 cm
1 cm = 10 mm

3. House prices have increased by $\frac{1}{2}$ in the last five years. What is this increase as a percentage?

Percentages are out of 100
 So $\frac{1}{2}$ as a percentage or $\frac{1}{2}$ as a decimal = 0.5
 $\frac{1}{2}$ Of 100 = $100 \div 2$ $0.5 \times 100 =$
= 50% **= 50%**

Therefore, house prices have increased by 50% in the last five years

4. A DIY shop is holding a '50% off' sale on kitchens. How much would you pay for a new kitchen worth £8,000 in the sale?

50% is equivalent to $\frac{1}{2}$
 To find $\frac{1}{2}$ of £8000 Remember when finding a fraction of an amount, you divide by the bottom
 $£8000 \div 2 = £4000$

The discount is £4000, so the cost of the new kitchen in the sale is:

£8000 - £4000 = £4000

5. You buy an antique necklace for £3,000. After ten years, its value increases by 20%. How much is it now worth?

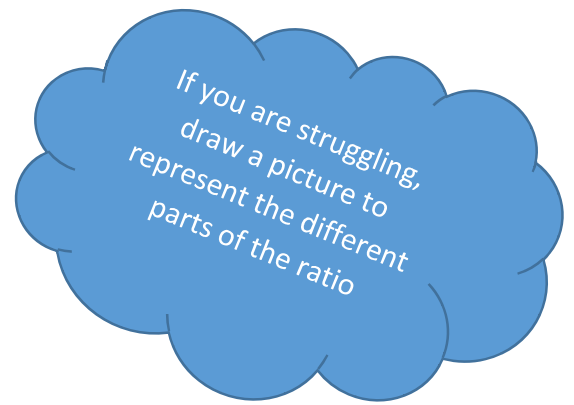
To find 10% or 20% is the equivalent to $\frac{1}{5}$
 $£3000 \div 10 = £300$ $\frac{1}{5}$ of £3000 = $£3000 \div 5$
 $20\% = 2 \times 10\% = 2 \times £300$ **= £600**
= £600

The new value of the necklace is

£3000 + £600 = £3600

Decimal	Percentage	Fraction
0.5	50%	$\frac{1}{2}$
0.25	25%	$\frac{1}{4}$
0.75	75%	$\frac{3}{4}$
0.2	20%	$\frac{1}{5}$
0.1	10%	$\frac{1}{10}$
0.333	33.3%	$\frac{1}{3}$

Activity 17: Answers



1. The ratio of sand to cement required to make concrete is 3:1.

How much of each is needed in order to make 60 m^3 of concrete?

This means 3 parts sand to 1 part cement, if we add these together we get 4 parts altogether.



To find what 1 part is worth, we need to divide 60m^3 by 4

$$60\text{m}^3 \div 4 = 15\text{m}^3$$

1 part = 15m^3 so 60m^3 requires

Sand = $3 \times 15\text{m}^3 = 45\text{m}^3$ **Cement = $1 \times 15\text{m}^3 = 15\text{m}^3$**

2. Read the label from a bottle of wallpaper stripper: ☒ Dilute: add 1 part wallpaper stripper to 7 parts water.

How much wallpaper stripper and water is needed to make 16 litres of solution?

This means 1 part wallpaper stripper to 7 parts water, if we add these together we get 8 parts altogether



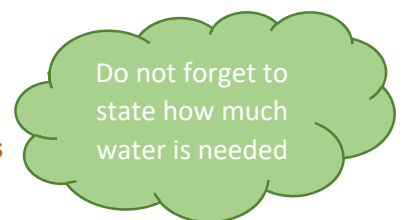
To find what 1 part is worth, we need to divide 16litres by 8

$$16\text{litres} \div 8 = 2\text{litres}$$

1 part = 2litres so 16litres of solution requires

Wallpaper stripper = $1 \times 2\text{litres} = 2\text{litres}$ **Water = $7 \times 2\text{litres} = 14\text{litres}$**

Therefore, you need 14litres of water to make the solution



3. To make a solution of hair colourant you need to add 1 part of hair colourant to 4 parts of water. How much hair colourant and water is needed to make 400 ml of solution?

This means 1part hair colourant to 4 parts water, making 5 parts altogether.



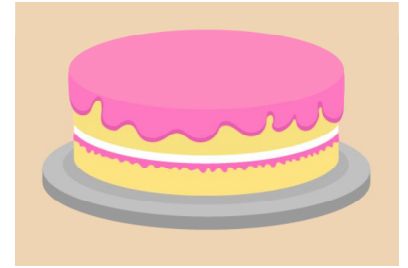
To find what 1 part is worth, we need to divide the 400ml by 5

$$400\text{ml} \div 5 = 80\text{ml}$$

1 part = 80ml so for 400ml of solution you would need

Hair colourant = $1 \times 80\text{ml}$ **Water = $4 \times 80\text{ml}$**

Activity 18: Answers



1. This recipe makes 10 large cookies: 220 g self-raising flour 150 g butter 100 g caster sugar 2 eggs

How much of each ingredient is needed to make 20 cookies?

To make 20 cookies you need to multiply each ingredient by 2

$$\text{Flour} = 220\text{g} \times 2 = 440\text{g}$$

$$\text{Butter} = 150\text{g} \times 2 = 300\text{g}$$

$$\text{Sugar} = 100 \times 2 = 200\text{g}$$

$$\text{Eggs} = 2 \times 2 = 4 \text{ eggs}$$

2. This recipe makes 4 servings of strawberry milkshake: 800 ml milk 200 g strawberries 4 scoops of ice cream

How much of each ingredient is needed for two people?

To make milkshakes for 2 people you need to divide each ingredient by 2

$$\text{Milk} = 800\text{ml} \div 2 = 400\text{ml}$$

$$\text{Strawberries} = 200\text{g} \div 2 = 200\text{g}$$

$$\text{Ice cream} = 4 \text{ scoops} \div 2 = 2 \text{ scoops}$$

3. This recipe makes dessert for 2 people: 300 ml milk 60 g powder

How much of each ingredient is needed to serve six people?

To make this dessert for 6 people you need to multiply each ingredient by 3

$$\text{Milk} = 300\text{ml} \times 3 = 900\text{ml}$$

$$\text{Powder} = 60\text{g} \times 3 = 180\text{g}$$



Activity 19: Answers

1. A label on a bottle of curtain whitener says that you should add 1 part concentrated curtain whitener to 9 parts water.

How much curtain whitener and water is needed to make up a 2,000 ml solution?

1 : 9

This means 1 part whitener to 9 parts water; if we add these together, we get 10 parts all together



You need 2000ml of solution. If 10 parts are worth 2000ml, to find what 1 part is worth =

$$2000\text{ml} \div 10 = 200\text{ml}$$

1 part = 200ml

so 2000ml requires

$$\text{Whitener} = 1 \times 200\text{ml} = \mathbf{200\text{ml}}$$

$$\text{Water} = 9 \times 200\text{ml} = \mathbf{1800\text{ml}}$$

You can check to see if your answers are correct by adding them together to see if they match the amount needed

2. Here is a recipe for a low-fat risotto for two people: 200 g mushrooms 175 g rice 180 ml water 180 ml evaporated milk Salt and pepper

How much of each ingredient is needed if you want to cook enough risotto for six people?

To make a risotto for six people you need to multiply each ingredient by 3

$$\text{Mushrooms} = 3 \times 200\text{g} = \mathbf{600\text{g}}$$

$$\text{Rice} = 3 \times 175\text{g} = \mathbf{525\text{g}}$$

$$\text{Water} = 3 \times 180\text{ml} = \mathbf{540\text{ml}}$$

$$\text{Evaporated milk} = 3 \times 180\text{ml} = \mathbf{540\text{ml}}$$

Activity 20: Answers

1. Harvey earns £7.75 per hour. How much will Harvey earn in 8 hours?

To answer this you need to multiply the amount Harvey earns in an hour (£7.75) by the number of hours (8)

$$£7.75 \times 8 = \mathbf{£62.00}$$

$$\begin{array}{r} 7.75 \\ \times 8 \\ \hline 62.00 \end{array}$$

2. A joint of pork takes 40 minutes per kilogram to cook, plus an extra 30 minutes to ensure the outside is crisp.

You need to use two steps for answering a + b

Step 1: 40 minutes x number of kilograms (kg)

Step 2: add 30 minutes

(40 x number of kilograms) + 30 = Cooking time

a) How long will it take for a 2 kg joint of pork to cook?

Step 1: $40 \times 2 = 80$ minutes

Step 2: add 30 minutes

80 + 30 = 110 minutes

b) How long will it take for a 1.5 kg joint of pork to cook?

Step 1: $40 \times 1.5 = 60$ minutes

Step 2: add 30 minutes

60 + 30 = 90 minutes

3. A mobile phone contract costs £15 a month for the first four months, then £20 a month after that. How much will the phone cost for one year?

Formula one = $£15 \times 4$ months

Formula two = $£20 \times (12 - 4)$ 8 months

1 year = 12 months

To answer the question you need to find the answers to both formulas and then add them together

Formula one + Formula two = total cost for the year

$$£15 \times 4 = \mathbf{£60}$$

$$£20 \times 8 = \mathbf{£160}$$

$$\mathbf{£60 + £160 = £220}$$

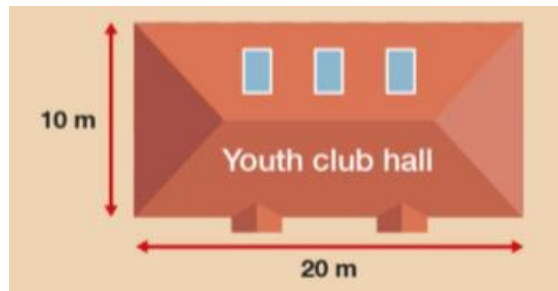
Therefore, the total cost of the contract for one year is £220

Important information highlighted to help you answer the question

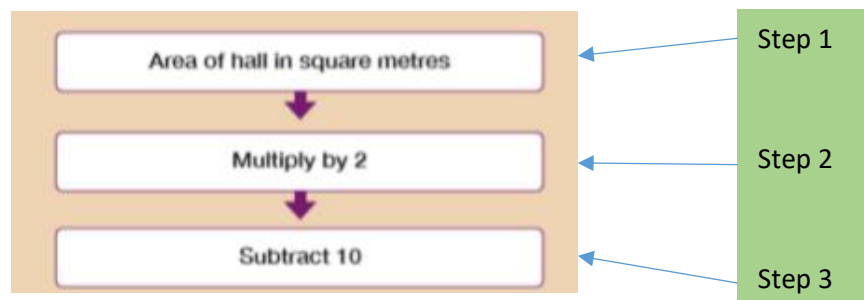
The question is giving you two formulas

Activity 21: Answers

The battle of the bands will take place in the youth club hall.



Shazad uses the following rule to find out the number of people allowed in any hall:



1. What is the number of people allowed in the youth club hall?

If we were to write each step of the function machine into a formula, it would look like this:

$(\text{Area of Youth club} \times 2) - 10 = \text{the number of people allowed in}$

The first step is to find the area of the youth club, using Length x Width

Area of youth club = $10 \times 20 = 200\text{m}^2$

The next step would be to multiply 200m^2 by 2

$200 \times 2 = 400$

To finish by subtracting 10

$400 - 10 = 390$

Therefore, the maximum number of people allowed in the youth club is 390

2. Simon meets a trainer at the leisure centre to set fitness goals. The trainer uses the following rule to calculate Simon's BMI:

$$\text{Simon's weight in kg} \div 3 = \text{Simon's BMI}$$

Important formula/ information given to be able answer the question

One of Simon's fitness goals is to have a BMI between 19 and 25.

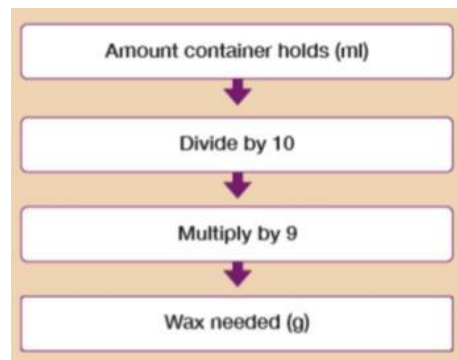
He currently weighs 72 kg. Is he meeting his fitness goal?

Using the formula above, you need to add Simon's weight to it at 72kg, the calculation would be:

$$72 \div 3 = 24$$
$$3 \overline{)72}$$

Simon's BMI is 24, so he is meeting his fitness goal.

3. Lena makes candles in containers. She knows a rule to work out how much wax she needs (measured in grams) to use for each container (measured in ml):



Lena has a container that holds 200 ml. How many grams of wax should Lena use in this container?

If we were to write each step of the function machine into a formula, it would look like this:

$$(\text{Amount container holds in ml} \div 10) \times 9 = \text{wax needed in grams (g)}$$

So

$$200\text{ml} \div 10 = 20$$

Then

$$20 \times 9 = 180\text{g}$$

Therefore, the maximum amount of wax needed for each container is 180g

5. Kofi sells souvenir photographs to visitors at the karting centre. The **cost price of each photo is £2.**

Kofi uses this rule to work out the selling price of each photo that will cover his costs and make a profit:



Important information given to be able answer the question

Kofi thinks that the photos should be sold for £8. Is this correct?

If we were to write each step of the function machine into a formula, it would look like this:

$$(\text{Cost price} \times 375) \div 100 = \text{selling price}$$

The cost price is £2

So if we substitute that into the formula

$$(2 \times 375) = 750$$

$$\begin{array}{r} 375 \\ \times 2 \\ \hline 750 \end{array}$$

Then

$$750 \div 100 = 7.50$$

Kofi is wrong they should sell for £7.50, not £8

Do not forget to state if he is correct