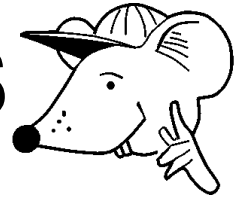


MATHEMATICS



N.S. Yr. 6 P.75

**Choose appropriate number operations
and methods of calculating.**

Equipment

Paper, pencil.

MathSphere

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Concepts

This module is concerned with getting children to make decisions about:

Which operation is involved in word problems

Whether calculations should be done mentally or with pen and paper.

How to explain and record the operations used in solving the problem.

This module focuses on examples and draws children's attention to these issues, but it is important to realise that these decisions should be taken by children in most things they do in mathematics, so encourage them to discuss their work wherever possible.

They should be able to make up number stories about sums; in other words, make up their own problems.

Here is an example of how **not** to do it!

Teacher: 'Paul, tell me a story about the sum $5.50 \times 10 = 55.00$ '

Paul: 'Two rabbits were walking down the road. One said to the other "What's five point five zero multiplied by ten?". The other rabbit said "That's easy, fifty five point zero zero".'

The teacher was expecting something along the lines: A film ticket cost £5.50. Ten tickets would cost £55.00'.

Children should also be able to deduce an operation in a sum.

Eg In the sum $6.4 * 8 = 0.8$, the * stands for division.

Lastly, they should be able to study the division of different pairs of numbers and state and justify which is the easiest and which is the hardest to do. This really makes them think about the operation of division.

Eg. $480 \div 20$ and $805 \div 23$

The first example is easier because you only need to shift the digits one place to the right to divide by ten and then divide the answer by two.

The second example is harder because we have to carry out a lengthy long division sum involving calculating multiples of 23.



Here are some problems. In each problem I would like you to say:

*Which operation (+ – × ÷) you used,
Whether you used a calculator, pencil and paper or did the sum in your head,
How you solved the problem.*

Can you give me an example, please?

Eg. Laura cycled 167km in five hours.
What was her average speed?

| | | | |
|-------------------|---|----------------|--------------|
| Operation: | \div | Answer: | 33.4 km/hour |
| Method: | I did some jottings on paper because it is easy to divide by 5. | | |
| How: | I doubled 167 and divided by 10 by moving the digits one place to the left. | | |

Practice with this one:

Eg. A builder made up 20 tonnes of concrete. One eighth of this was cement powder. How much cement powder did he use?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

Work out each problem and then fill in the table.



- 2 750 people watched Maths Rats Rovers play Piggy United last year. This was 354 more than this year. How many watched the match this year?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

- A school has 620 pupils in twenty classes. What was the average class size?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

- A marble weighs 7.5g. How many marbles could be made from 2Kg of glass?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

Work out each problem and then fill in the table.



1. A plane holds 365 passengers. How many planes would be needed for 4 800 passengers?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

2. A thermometer shows a temperature of seven point three degrees Celsius. If the temperature falls by ten point four degrees, what is the new temperature?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

3. The length of a cuboid is 5.6 centimetres, its width is 1.8 centimetres and its height is 1.9 centimetres. What is its volume?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

Work out each problem and then fill in the table.



1. What number is five point eight greater than ten point nine?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

2. Orange bottle crates are six bottles long and five bottles wide. How many bottles can eight of these crates hold?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

3. 972 screws are put into thirty six similar boxes. How many nails will there be in each box?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

Work out each problem and then fill in the table.



1. David can stride 97cm. How long is 55 of his strides?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

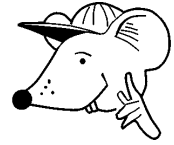
2. Alan has £2.65 pocket money and Mick has £4.85. How much do they get between them.

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

3. Sally buys an adult cinema ticket at £5.88. James buys a child ticket at £2.90. How much do they pay altogether?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

Work out each problem and then fill in the table.



1. If 16 Bimpers make a Bamper and 24 Bampers make a Bumper, how many Bimpers make a Bumper?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

2. The average height of a nine year old is 142. What would be the total height of nineteen pupils of average height?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

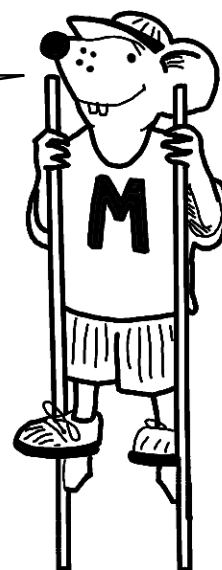
3. What do I need to subtract from 34.86 to get 29.73 ?

| | | | |
|-------------------|--|----------------|--|
| Operation: | | Answer: | |
| Method: | | | |
| How: | | | |

I'm going to give you some sums and I would like you to make up some number stories about them.

For example, if I give you the sum $25 \div 4 = 6.25$, you could say:

"4 CD players cost £25 altogether. They cost £6.25 each."



Or you could say:

"Peter walked 25 kilometres in 4 hours. His average speed was 6.25 km/hour."

1. Try to make up a problem for these sums:

a. $27 + 27 = 54$

b. $945 - 635 = 310$

c. $389 \times 5 = 1\,945$

d. $78 \div 6 = 13$

e. $2\,815 + 7\,362 = 10\,177$

f. $45.82 - 12.66 = 33.16$

g. $2.6 \times 10 = 26$

h. $7.63 \times 36 = 274.68$

i. $461.7 \div 9 = 51.3$

j. $78.9 - 30 = 48.9$

k. $999 + 1 = 1\,000$

l. $1 - 0.7 = 0.3$

2. Which operation (+ - \times \div) does the star represent in each sum?

a. $9.3 * 2.8 = 12.1$

b. $97 * 2.6 = 94.4$

c. $770 * 7 = 110$

d. $23.7 * 6 = 142.2$

e. $58 * 15 = 870$

f. $32.8 * 8 = 4.1$

g. $9\,216 * 372 = 9\,588$

h. $1\,274 * 722 = 552$

i. $96.96 * 8 = 12.12$

j. $2.71 * 10 = 27.1$

k. $722 * 88 = 634$

l. $1.25 * 2.33 = 3.58$



I am going to give you some division sums.

Discuss with your friends or teacher why some of them are easier to do than others.

Eg. The first of these sums is easier because to divide by twenty we only need to move the digits one place to the right and then divide by two.

The second sum is harder because we need to do a long division sum and know our eight times table very well.

$$38.8 \div 20$$

$$834.6 \div 8$$

1.

a. $78.9 \div 10$

b. $67.9 \div 100$

c. $653.4 \div 36.3$

d. $800 \div 8$

e. $351 \div 9$

f. $445.5 \div 27$

2. Describe how you would answer this problem:

Petra bought 27 pears for £4.05

Simone bought 34 pears for £5.44

How does the cost of one of Petra's pears compare with the cost of one of Simone's pears?

Answers

Page 3

Practice question \div 2.5 tonnes

Page 4

1. $-$, 2 396 spectators
2. \div , 31 per class
3. \div , 266

Page 5

1. \div , 14 planes
2. $-$, -3.1 degrees
3. \times , 19.152 cm^3

Page 6

1. $+$, 16.7
2. \times , 240 bottles
3. \div , 27 nails per box

Page 7

1. \times , 5 335cm or 53.35m
2. $+$, £7.50
3. $+$, £8.78

Page 8

1. \times , 384
2. \times , 2 698cm or 26.98m
3. $-$, 5.13

Page 9

1. Children's own ideas.
2. a. $+$ b. $-$ c. \div d. \times e. \times f. \div
g. $+$ h. $-$ i. \div j. \times k. $-$ l. $+$

Page 10

1. Children's own ideas.
2. Something like:
 $\pounds 4.05 \div 27 = 15\text{p each}$
 $\pounds 5.44 \div 34 = 16\text{p each.}$
Petra's pears are cheaper.