Place value and written calculation: fact sheet

Extra topic (not on the planner) · Learn these facts

Place value

Th	H	T	O	.	t	h
2	7	9	6	.	3	5

The 9 is worth 90

The 3 is worth 3 tenths

× and ÷ by 10, 100

31.7 × 100 = 3170

digits move 2 places left

The decimal point stays still

Long multiplication

273 × 54

273 × 50 = 13 650

273 × 4 = 1092

total 14 742

Or use the grid method

Decimals × decimals

63 × 24 = 1512

2 decimal places

6.3 × 2.4 = 15.12

Count decimal places at the end

Which sheet do I need?

Place value and number facts ▸
place value, number facts

Written calculation ▸
work it out without a calculator

Number problems and number machines ▸
a word problem or number machine

Key words

- **Digit** one of 0 to 9
- **Place value** what a digit is worth in its position
- **Product** the answer to a multiplication
- **Inverse** the opposite operation

Dividing by a decimal

818.4 ÷ 1.2

= 8184 ÷ 12

= 682

Make the divisor a whole number

Multiply both by 10

Number machines

forwards: follow the arrows

backwards: inverse, in reverse

× 2 then − 10: back is + 10 then ÷ 2

Remainders

4275 ÷ 28 = 152.7

"full bags": round down

"need enough": round up

Think about the context

Calculator

Fractions	use the fraction key
Roots	√ key: √1.44 = 1.2
Brackets	type them in

Exam tips

- Write numbers in columns to add or subtract.
- Show your written method on non-calculator papers.
- Estimate first to check your answer is sensible.
- Decimals: count the decimal places in the question.
- Number machines backwards: undo each step in reverse.
- Write all the figures on the display when asked.

Place value and number facts: fact sheet

Place value and written calculation · Extra topic · Learn the method

Worked example

QUESTION

Write down the value of the 7 in the number 1074.

ANSWER

1 thousand, 0 hundreds, 7 tens, 4 ones

The 7 is in the tens column

70

Name the column, then say what the digit is worth.

How to do it

1. Write the column headings.
2. Put each digit in its column.
3. The value is the digit × the column.
4. Ordering: line up the decimal points.
5. Halfway: add and divide by 2.

Model answer:

70

Watch out

- Writing 7 instead of 70.
- Lining up digits from the left, not the decimal point.
- Mixing up tenths and tens.

Written calculation: fact sheet

Place value and written calculation · Extra topic · Learn the method

Worked example

QUESTION

Work out 3.67 × 4.2

ANSWER

1. Estimate: 4 × 4 = 16
2. Take out the decimal points: 367 × 42 = 15 414
3. There are 3 decimal places in the question (3.67 and 4.2), so put 3 back.

15.414

Take the decimal points out, multiply, then put them back.

How to do it

1. Estimate: 4 × 4 = 16.
2. Multiply without the decimal points.
3. Count the decimal places in the question.
4. Put that many back in the answer.
5. Check against your estimate.

Model answer:

15.414

Watch out

- Lining up the columns wrongly.
- Forgetting to carry.
- Putting the decimal point in the wrong place.

Number problems and number machines: fact sheet

Place value and written calculation · Extra topic · Learn the method

Worked example

QUESTION

Here is a number machine: input → × 2 → − 10 → output

The output is 28. Work out the input.

ANSWER

1. Work backwards and do the opposite of each step.
2. Undo − 10: 28 + 10 = 38
3. Undo × 2: 38 ÷ 2 = 19

19

Undo each step in reverse order.

How to do it

1. Read what you are given and what you need.
2. Number machines: forwards follow the arrows.
3. Backwards: inverse operations in reverse.
4. Remainders: decide to round up or down.
5. Write a sentence with your answer.

Model answer:

19

Watch out

- Going backwards with the same operation.
- Rounding the wrong way.
- Not answering the question asked.