Column addition no exchange

$$\begin{array}{r} 245 \\ +\ 124 \\ \hline 369 \end{array}$$

$$\begin{array}{r} 362 \\ +\ 311 \\ \hline 673 \end{array}$$

Addition

Key tip:
Make sure all digits are aligned.

Children will use manipulatives if needed

Column addition with exchange

$$\begin{array}{r} 359 \\ +\,224 \\ \hline 583 \\ \hline \end{array}$$

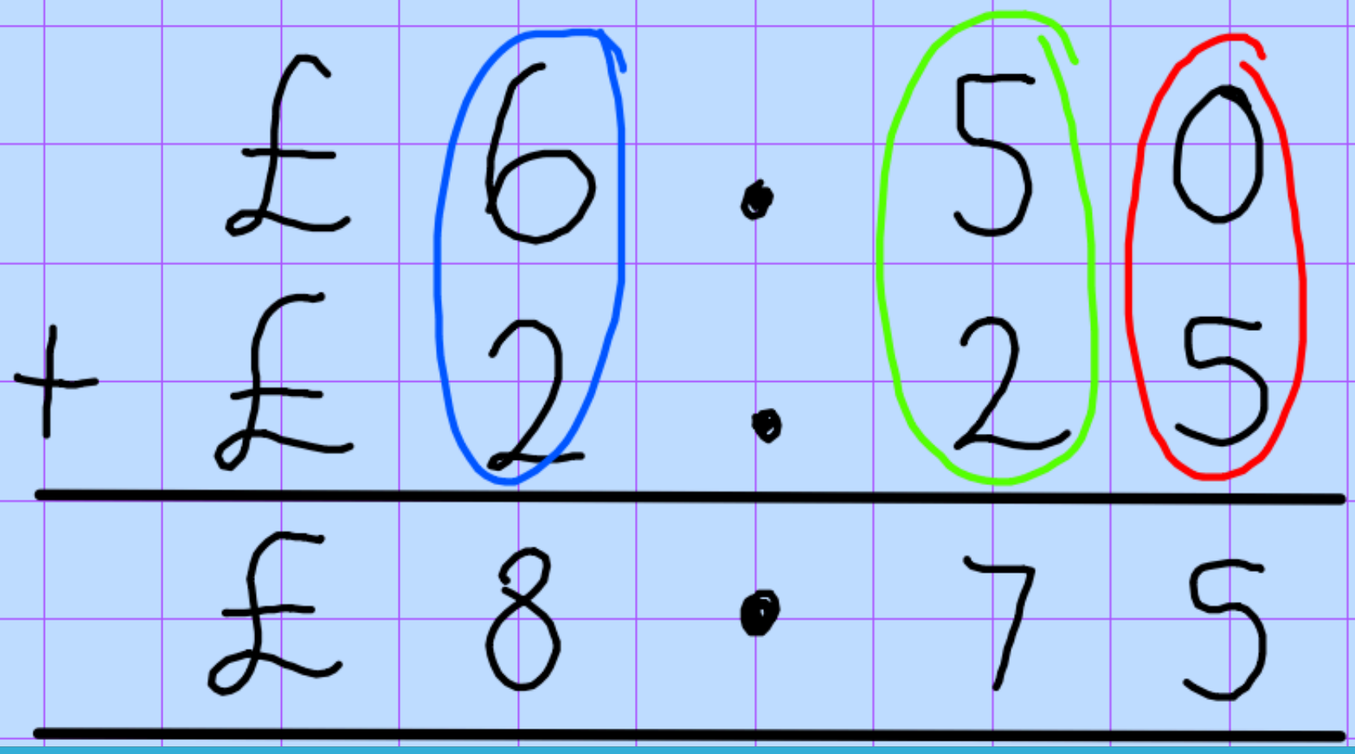
$$\begin{array}{r} 482 \\ +\,241 \\ \hline 723 \\ \hline \end{array}$$

Column addition with exchanging

Key tip: Always work from right to left. If an answer for a column is greater than 9, the ones number goes in the column answer box and the tens number from the column answer is exchanged to the next column to the left.

children can use manipulatives and visuals to support this.

Addition using decimals



Adding decimals

Key tip: ensure the decimal points are always aligned. If there are missing digits, use a placeholder zero. Calculate this like an addition question.

The decimals must be aligned

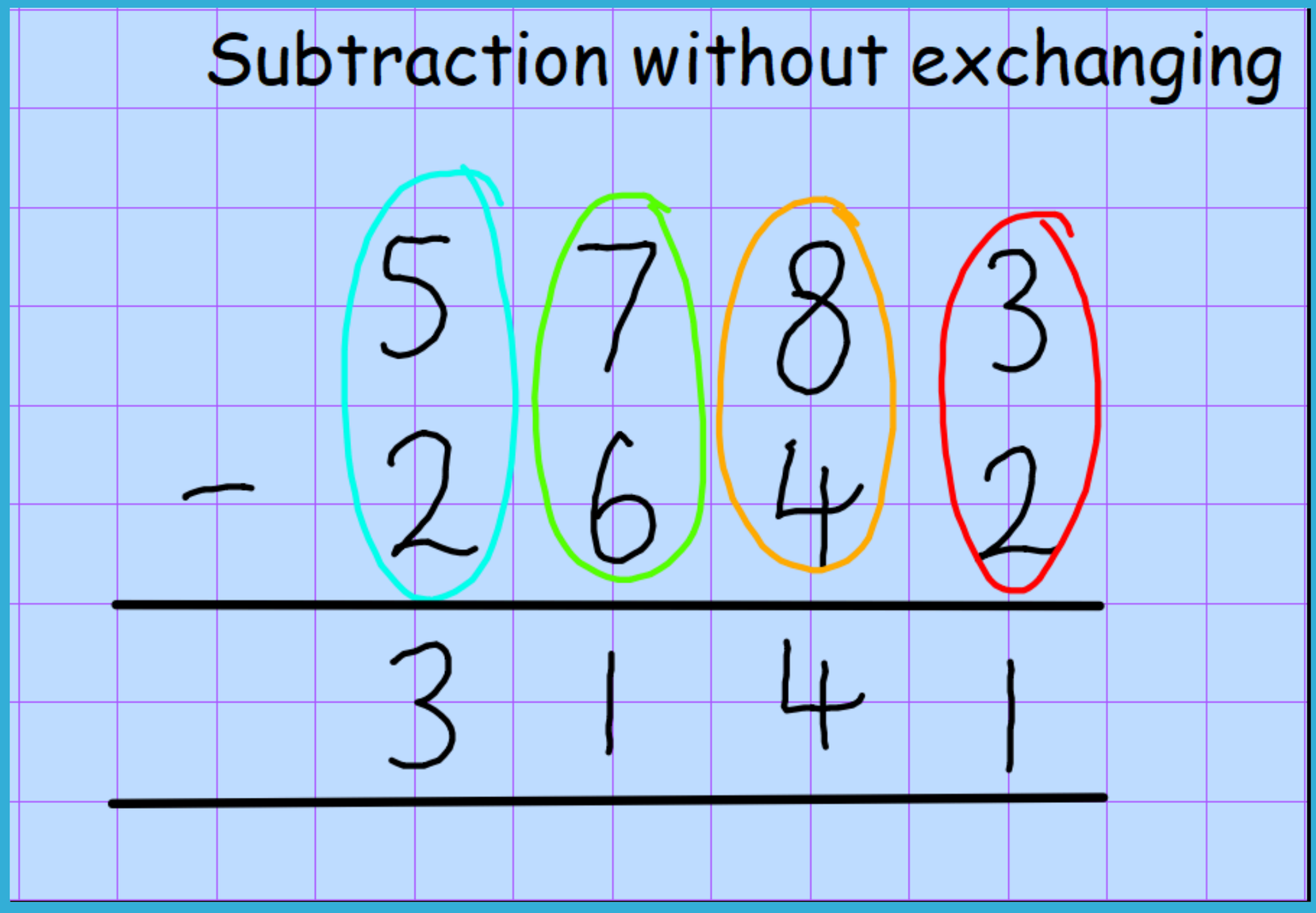
Column subtraction with no exchange

$$\begin{array}{r} 954 \\ -\ 423 \\ \hline 531 \end{array}$$

Column subtraction

Key tip: Always subtract from right to left, the number on the top has the number from the bottom taken away from it.

Children can use visuals and manipulatives



Subtraction without exchanging

Key tip: Always subtract from right to left, the number on the top has the number from the bottom taken away from it.

Make sure the digits align.

Column subtraction with exchange

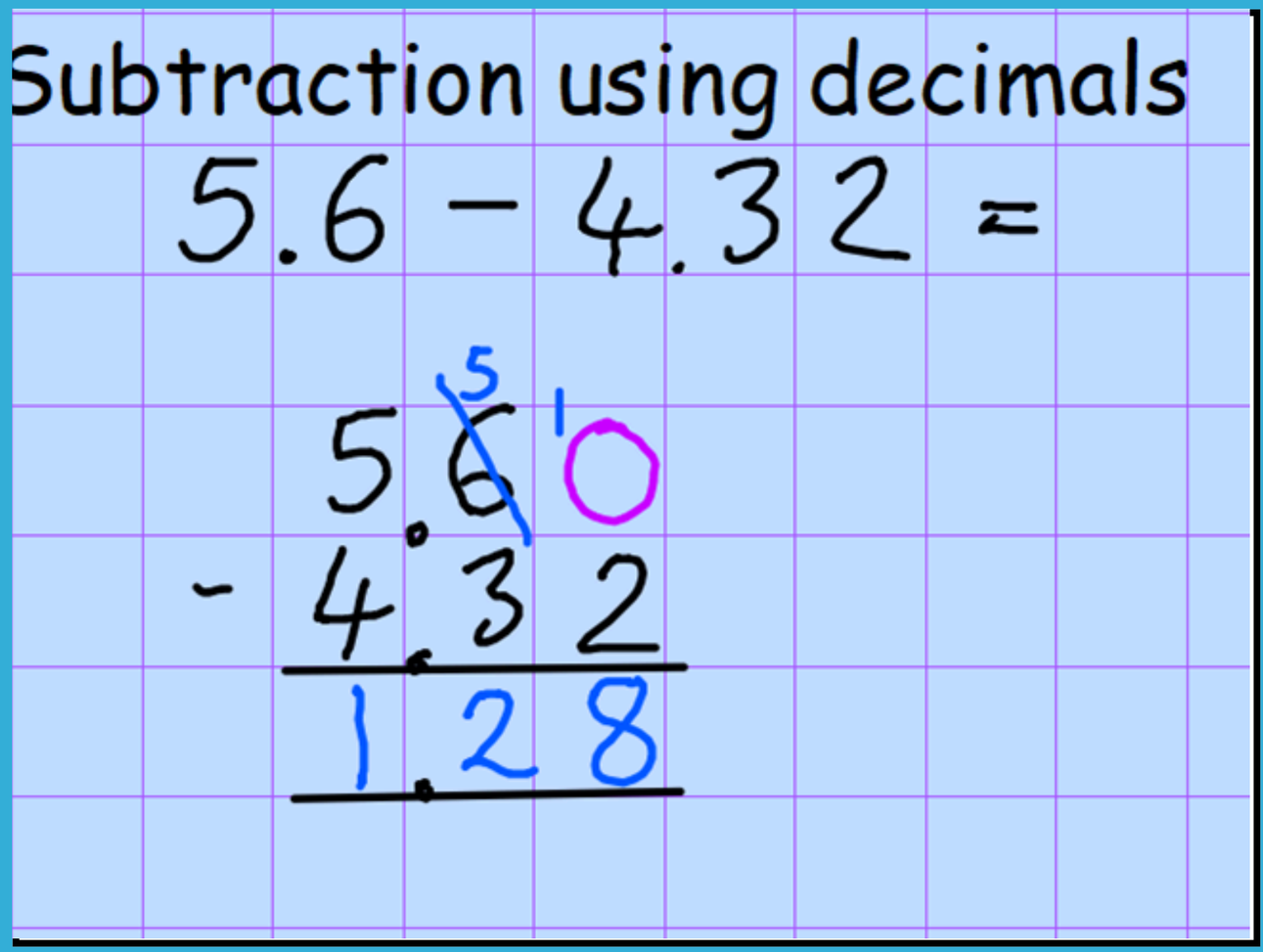
$$\begin{array}{r} {}^{4}\cancel{5}^{1}1 \\ -\ 232 \\ \hline 719 \end{array}$$

$$\begin{array}{r} {}^{4}\cancel{5}^{1}6 \\ -\ 242 \\ \hline 284 \end{array}$$

Column subtraction with exchange

Key tip: Work from right to left, if the number in the column on the bottom row is larger than the number on the top. You will need to exchange from the column to the left. The number is reduced by 1, when it exchanges to the next column it becomes a 10. It adds to the number in the top row of the column to make a 2 digit number.

Always work from right to left



Align the digits using the decimal point

Subtracting decimals

Key tip: always make sure the subtracted number is on the top.

Subtraction using decimals

$5.6 - 4.32 =$

$$\begin{array}{r} 5.\overset{5}{\cancel{6}}\overset{1}{0} \\ -\ 4.32 \\ \hline 1.28 \end{array}$$

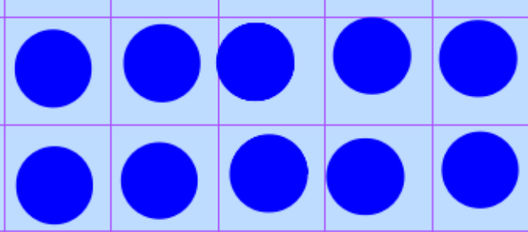
Subtraction using decimals

Key Tip: align the numbers using the decimal points. Subtract from right to left and exchange if needed.

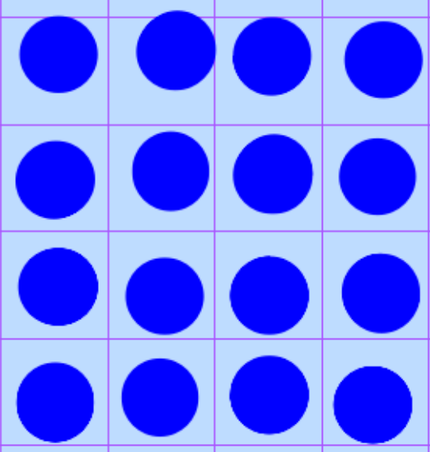
Align the decimals

Multiplying

5 x 2 = 10



4 x 4 = 16

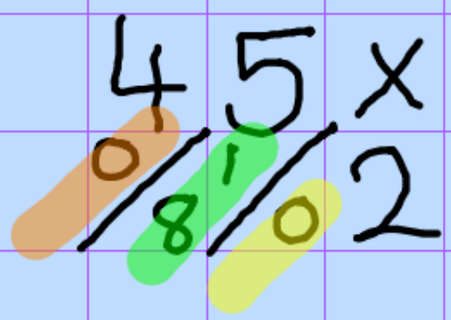


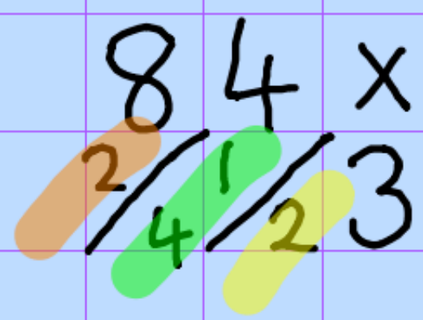
Multiplying

Key Tip: Use arrays or known facts. Eg 6 x 2 is the same as 5x2 + 1 x 2.

Use manipulatives and visuals to support

Multiplying a 2 digit by a 1 digit number





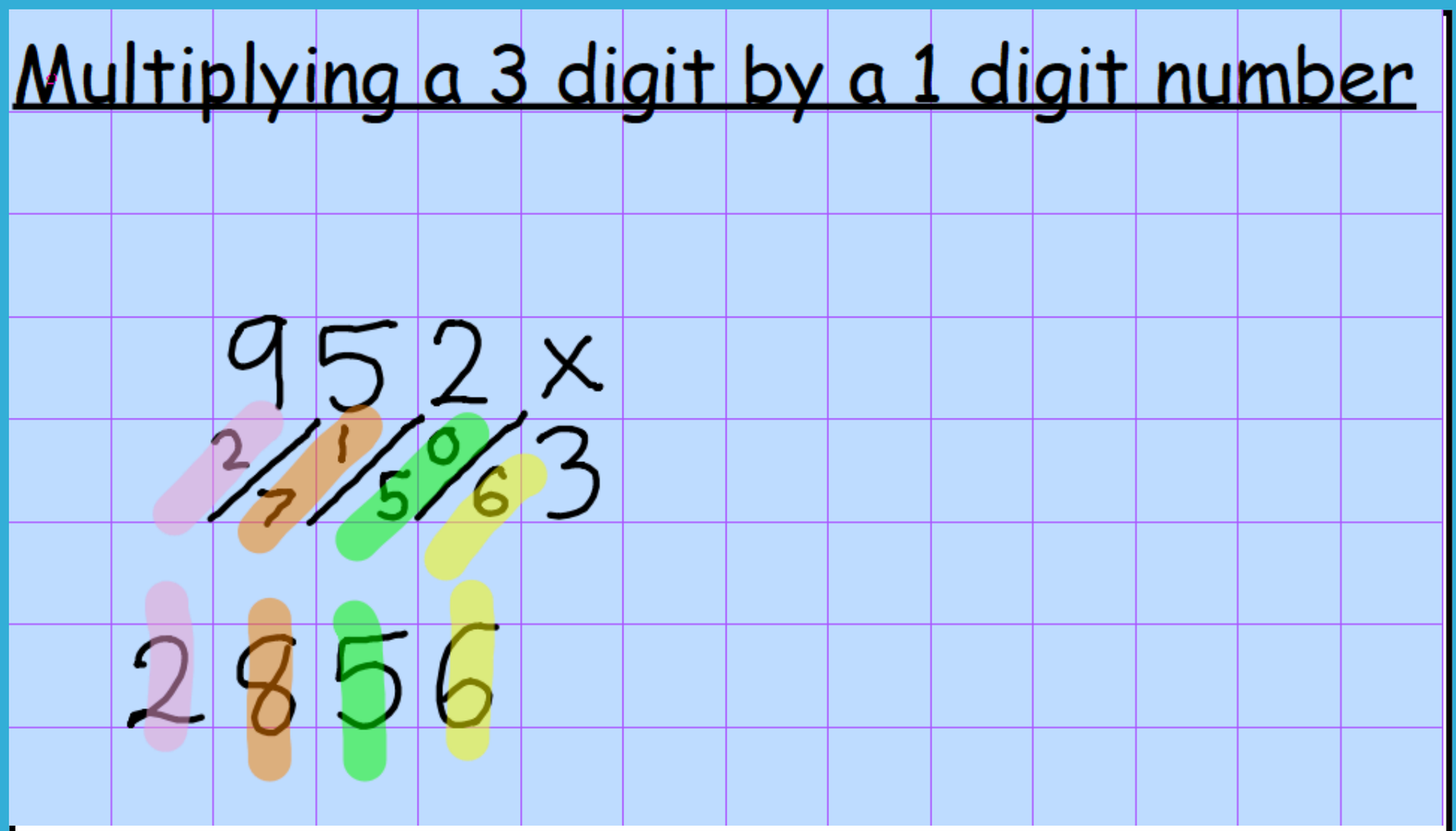
Add on the diagonal.

Multiplying 2 digits by 1 digit

Key tip: the larger number goes across the top, the smaller number down the side. Split the boxes, for each box's answer, the ones number goes below the split and the tens goes above.

use colour pencils to track where to add

Multiplying a 3 digit by a 1 digit number



Multiplying 3 digits by 1 digit

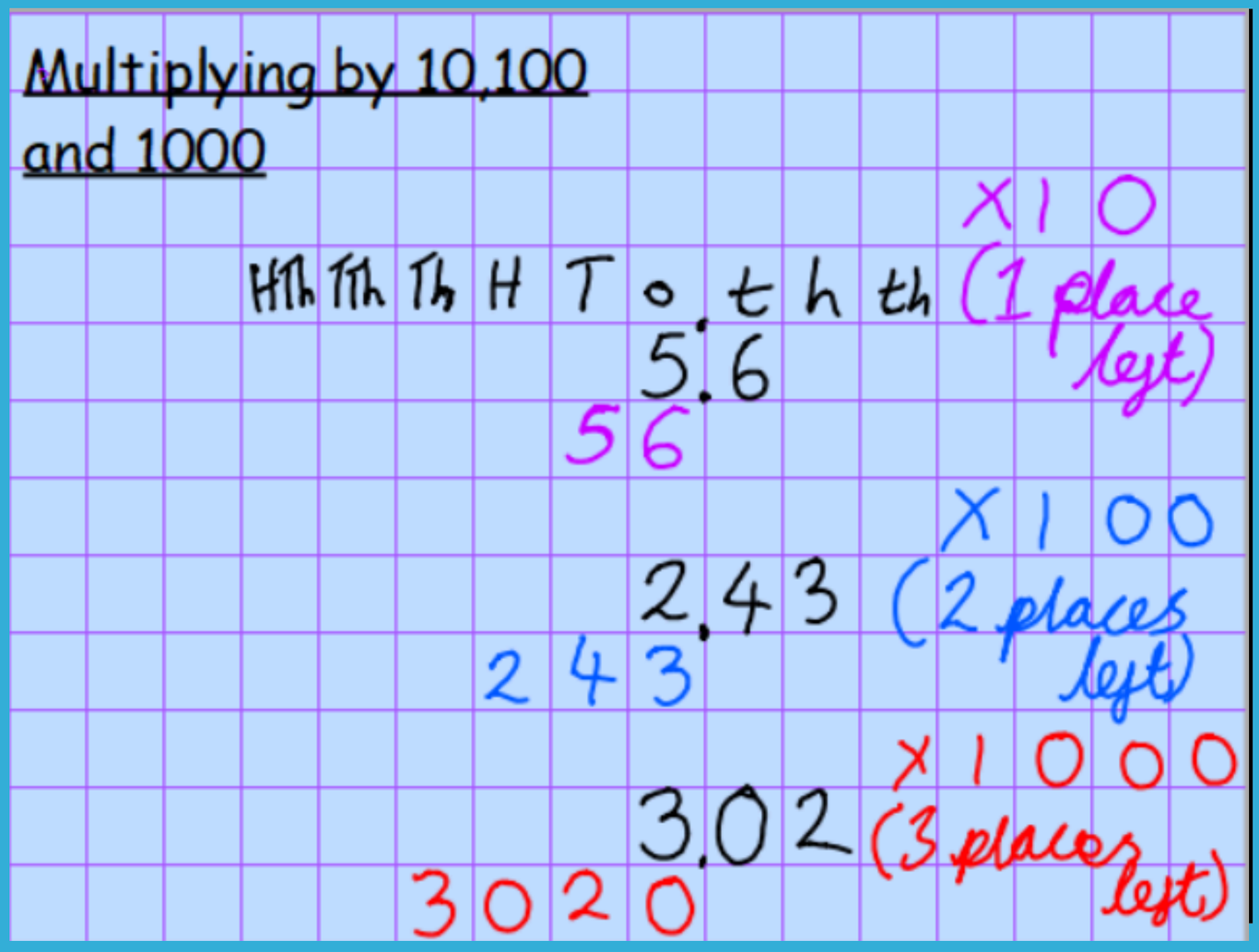
Key tip: add on the diagonals, any exchanging goes into the next column

Use colours to help the adding

Hundreds	Tens	Ones
H	T	O
5	7	7
5	7	0

Multiplying by 10

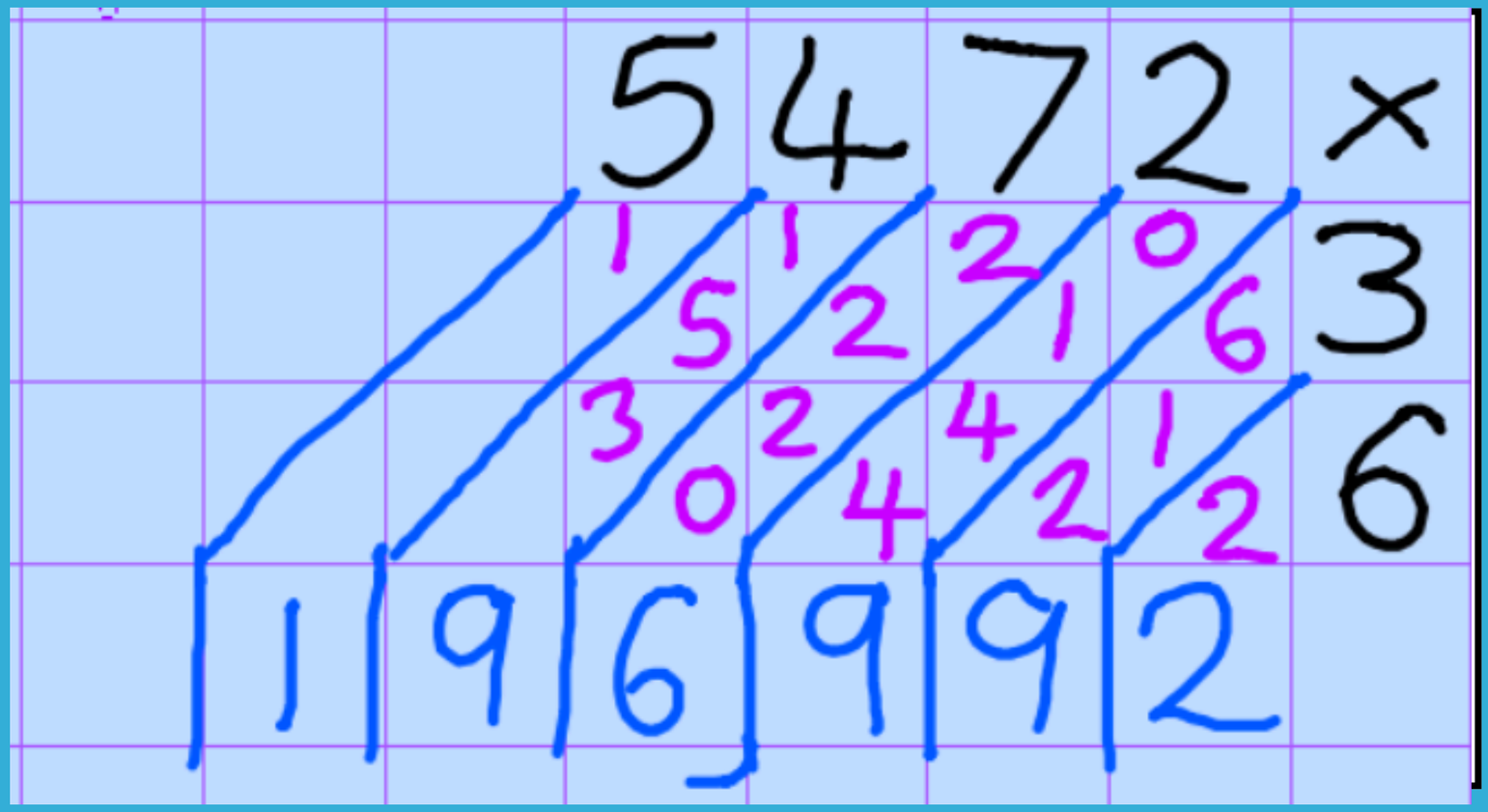
Put the numbers in each place value column. Move each digit one space to the LEFT. Don't forget place holders



Multiplying by 10, 100 and 1000

To Multiply by 10. Put numbers in columns, move all digits one space LEFT.
To multiply by 100, move all digits two spaces LEFT.
To multiply by 1000, move all digits three spaces LEFT

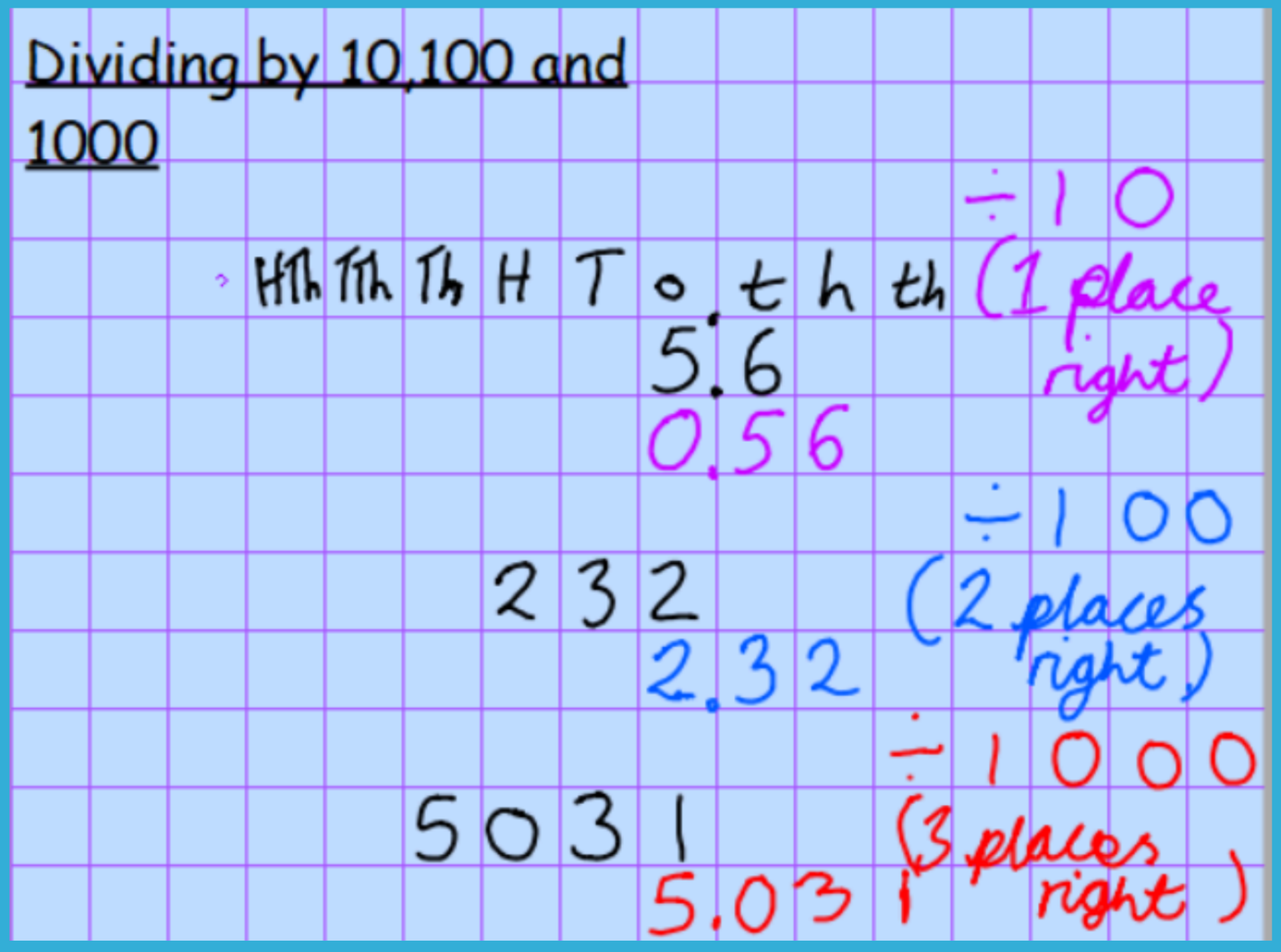
Key tip: if after you moved numbers there are gaps in columns add placeholders.



Long multiplication

Write the larger number across top, the smaller number down the side.
Multiply each square, tens number above the line ones number below.
Add the numbers on the diagonals.

Key tip: remember the 0 for the one digit answers in boxes



Dividing by 10, 100 and 1000

To divide by 10. Put numbers in columns, move all digits one space RIGHT.
To divide by 100, move all digits two spaces RIGHT.
To divide by 1000, move all digits three spaces RIGHT

Key tip: if a number hasn't got a decimal point in it, it is at the end.

Short Division

9546 ÷ 3 =

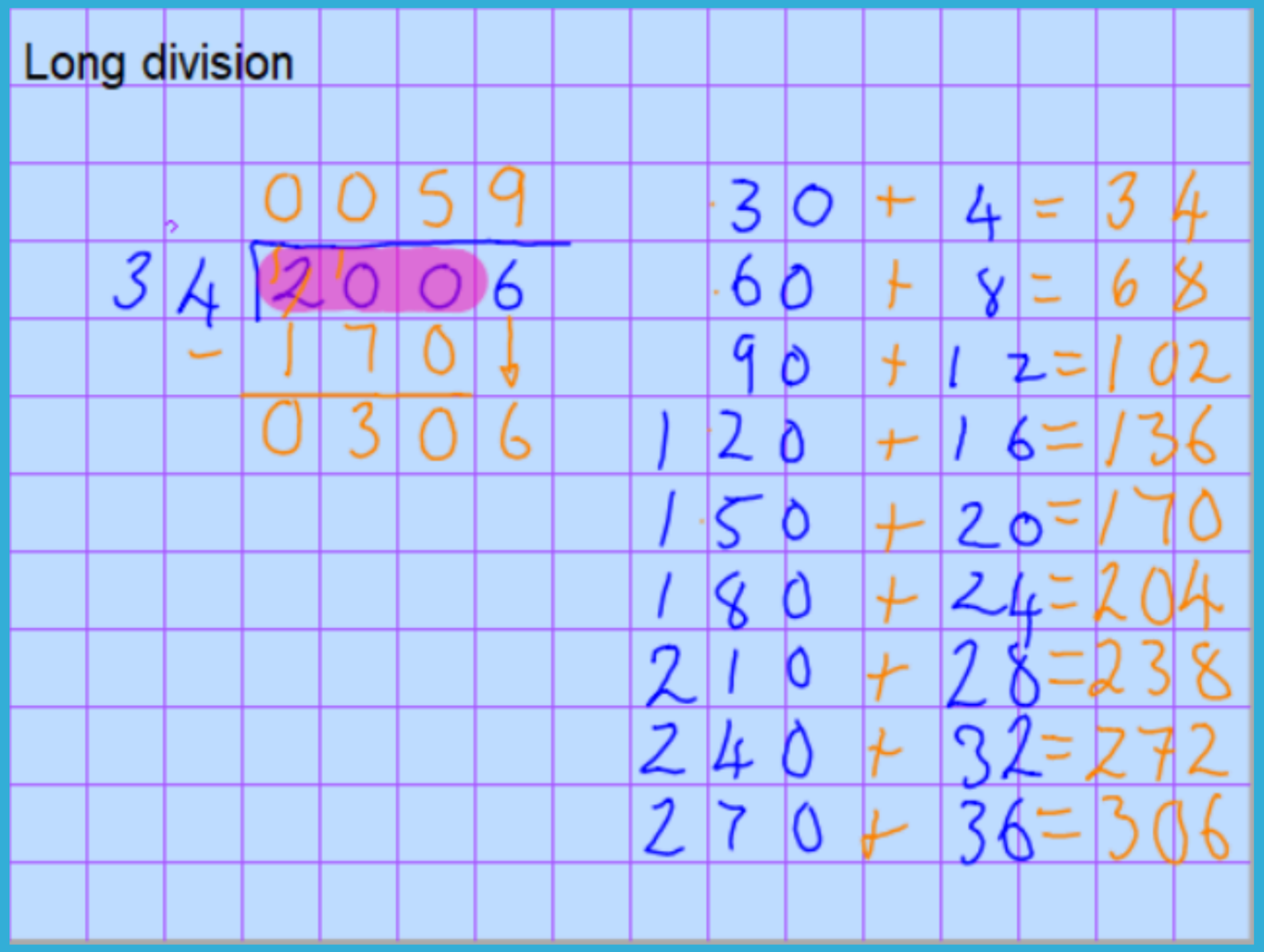
$$\begin{array}{r} 3182 \\ 3\overline{)9\,5^{2}4\,6} \end{array}$$

$$\begin{array}{r} 1308\text{ r }3 \\ 4\overline{)5\,{}^{1}2\,3\,5} \end{array}$$

Short Division

Write the number you are dividing by outside the line.
Write the number you are dividing inside the line.
Start on the left, how many 3s in 9 , 3 no remainder.
Go to the next column

Key tip:
remainders can be written as numbers, fractions or the calculation can go to decimals



Write out the multiples of the number you are dividing by, split them into tens and ones.
Divide into the columns.
Subtract below the column.
Bring down the next columns to add to the answer of the subtraction

<u>Key tip:</u> make sure you subtract the number from the timestable from the number in the columns.

<u>Long Division</u>

Adding and subtracting fractions with the same denominator

$$\frac{1}{8} + \frac{2}{8} = \frac{3}{8}$$

$$\frac{5}{9} - \frac{4}{9} = \frac{1}{9}$$

Adding fractions with the same denominator

Line up the fractions.
Add the numerators or subtract them depending on the question. Keep the denominator the same.

Key tip: check the symbol after you complete the calculation.

Adding fractions with different denominators

$$\frac{3}{4} + \frac{2}{8} =$$

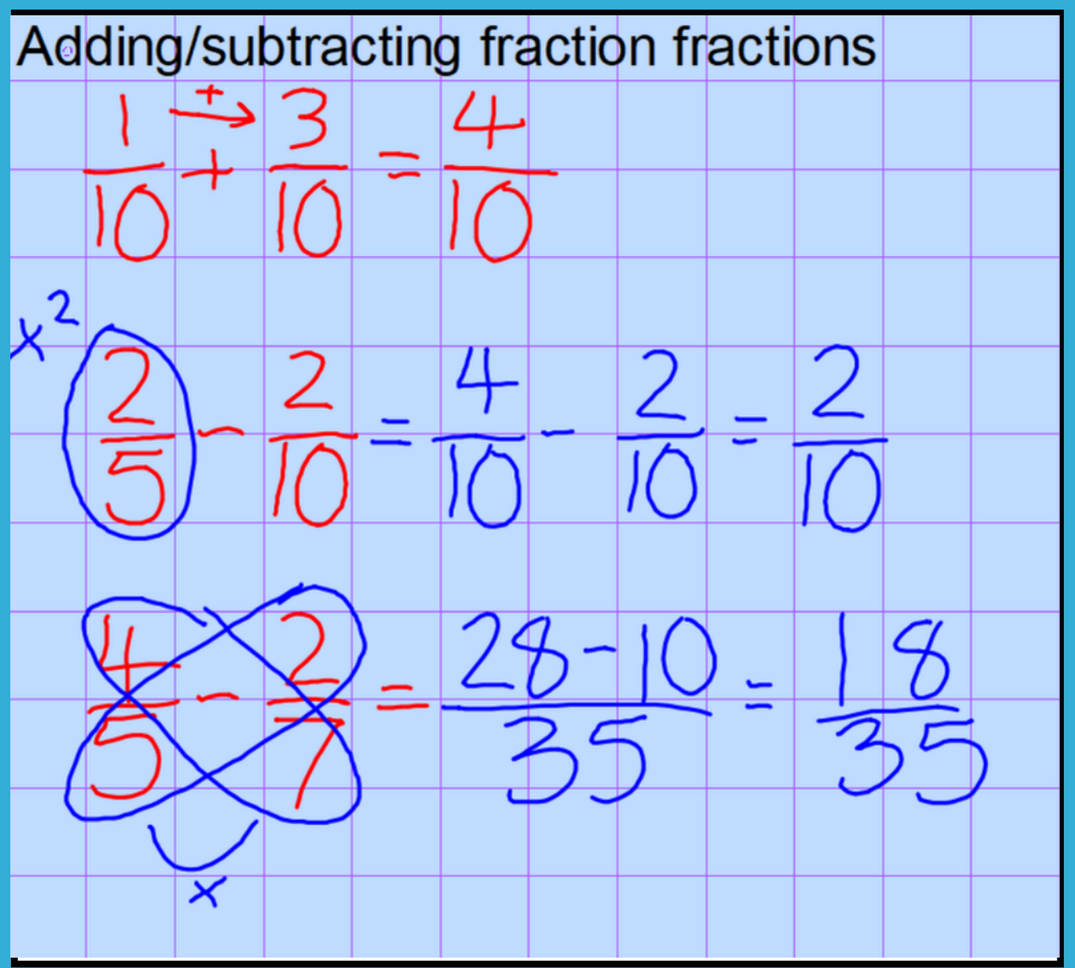
x2

$$\frac{6}{8} + \frac{2}{8} = \frac{8}{8} = 1$$

Convert the fraction with the smaller denominator into the larger denominator.
Add the changed fractions to the original unchanged fractions from the question.

Adding fractions with different denominators (common multiples)

Key tip: convert away from the question to avoid confusion



If the denominators are the same : add or subtract the numerators

the other, multiply the smaller denominator to be the same as the

If the denominators are not multiples or the same, multiply the opposite numerators and denominators and then add or subtract

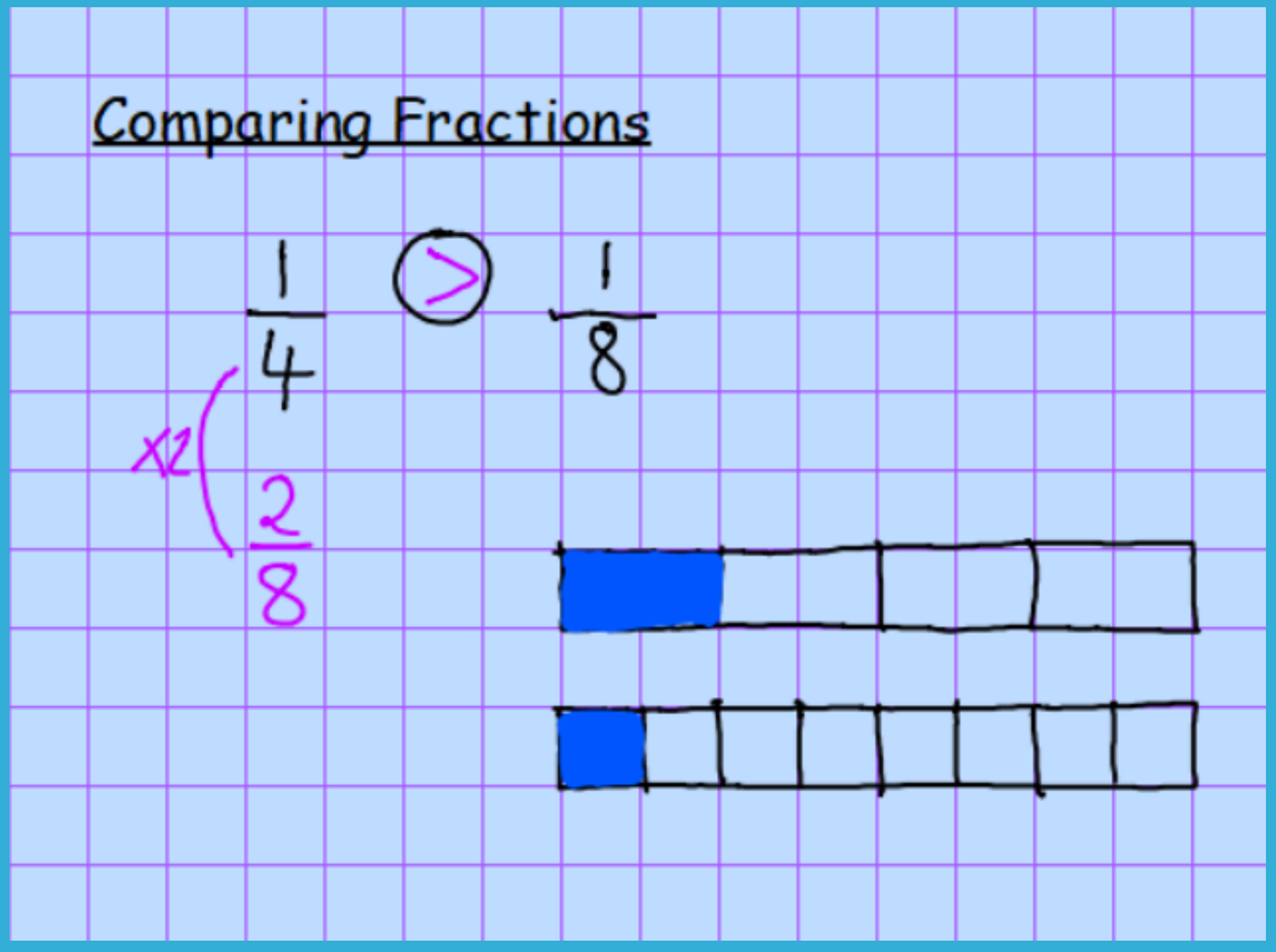
Adding and subtracting fractions

Key tip: always check the denominator before you start

$$\frac{4}{5} \times \frac{2}{7} = \frac{28-10}{35} = \frac{18}{35}$$

Multiply the denominators together.
Multiply the opposite numerators and denominators.
Put the answers over the new denominator

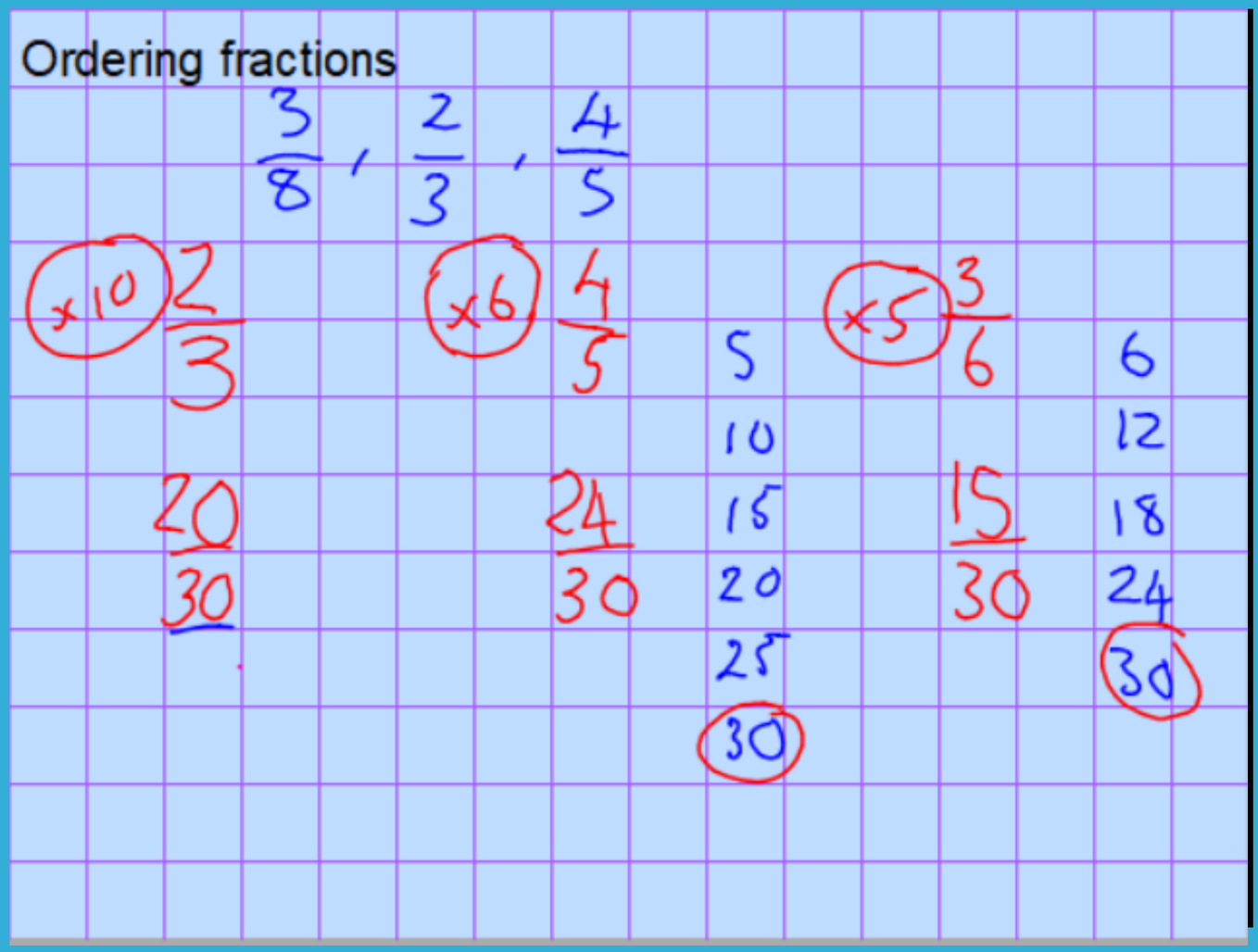
Converting unalike fractions



Convert fractions to the same denominator.
If the denominators are the same, the larger the numerator the larger the fraction.

Comparing fractions

Key tip: some fractions can be simplified.



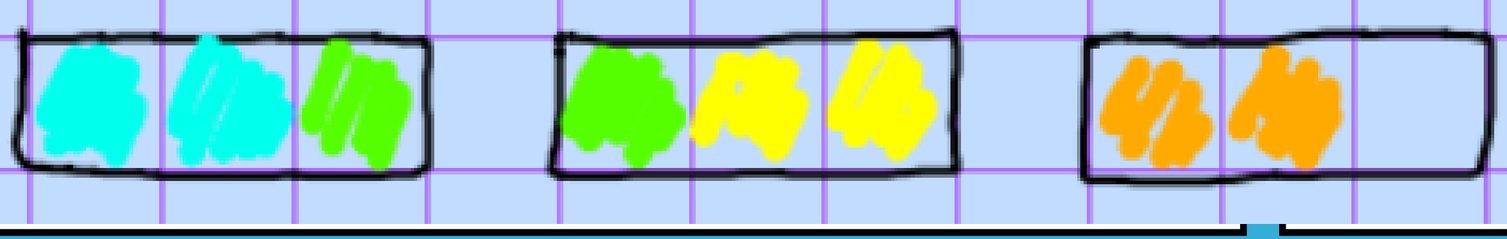
Find a common multiple.
Convert all the fractions to the common multiple.
Order by the numerators of the new fractions.

Ordering Fractions

Key tip: write the multiples out to see where the common multiple is

Multiplying fractions

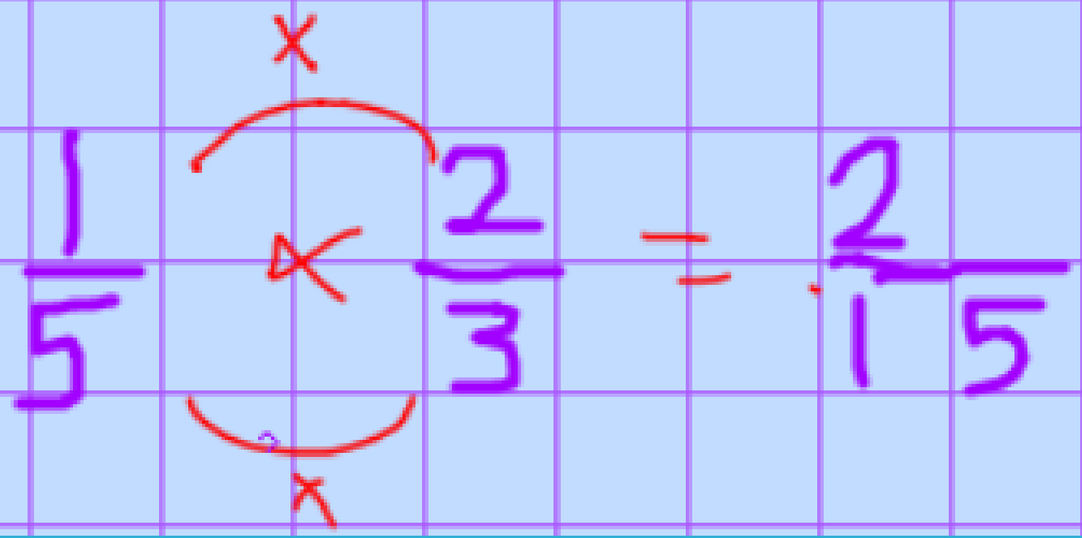
$$\frac{2}{3} \times 4 = \frac{8}{3} = 2\frac{2}{3}$$



Multiply the numerator by the integer (whole number). The denominator stays the same

Multiplying fractions by integers

Multiplying fractions



Multiply the numerator by the numerator
Multiply the denominator by the denominator

Multiplying fractions by fractions

Dividing fractions

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

The numerator stays the same
Multiply the denominator by the integer (whole number) to get the new denominator

<u>Dividing fractions by integers</u>

Fraction of an amount

× 3 / ÷ 4 of 160

040
4 | 160

40 x 3 = 120



Divide the amount by

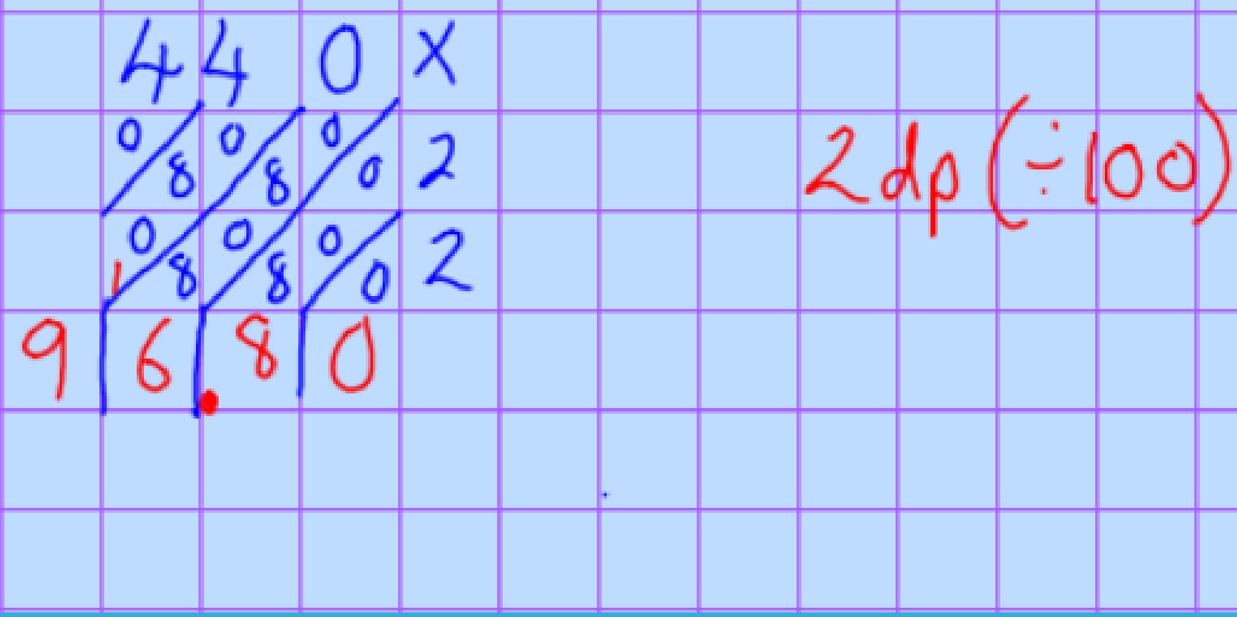
the fraction.
Multiply the answer
by the numerator.

Key tip: there can not be a remainder with fractions of amounts. Go into decimals if needed when dividing.

Fraction of amounts

Percentage of an amount

22% of 440 = 96.80

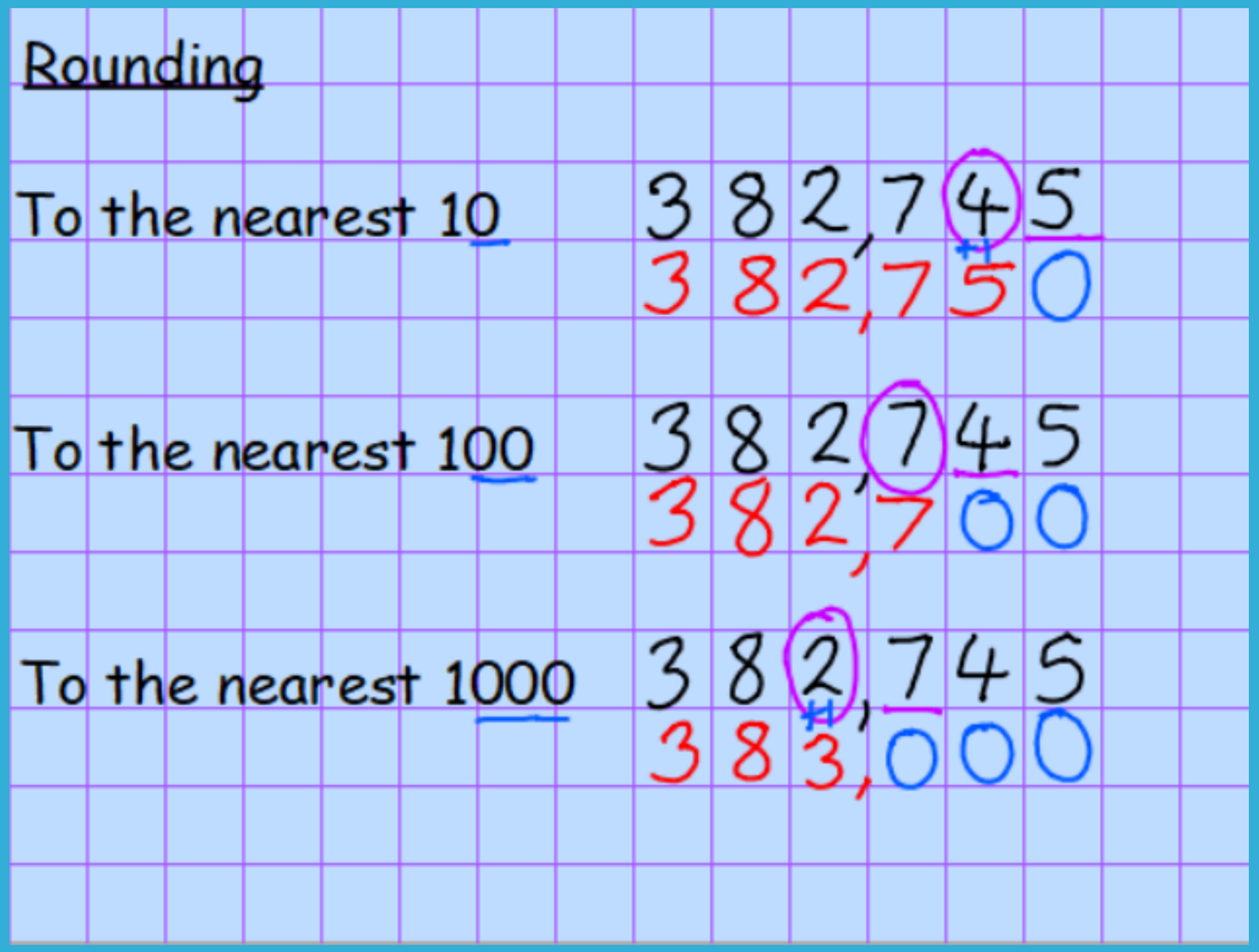


2dp (÷100)

Key tip: divide by 100 at the end.

Multiply the amount by the percentage.
Divide the answer by 100.

Percentage of amounts



Circle the column you are rounding to.
Underline the number in the following column.
If the number is 5 or above the circled number goes up.
If the number is 4 or below the circled number stays the same.
Add place holders after the circled number.

Key tip: round the number under the original number and label the place value columns

Rounding

Rounding

To the nearest whole number

57.35

5 7

To the nearest 1 decimal place

57.35

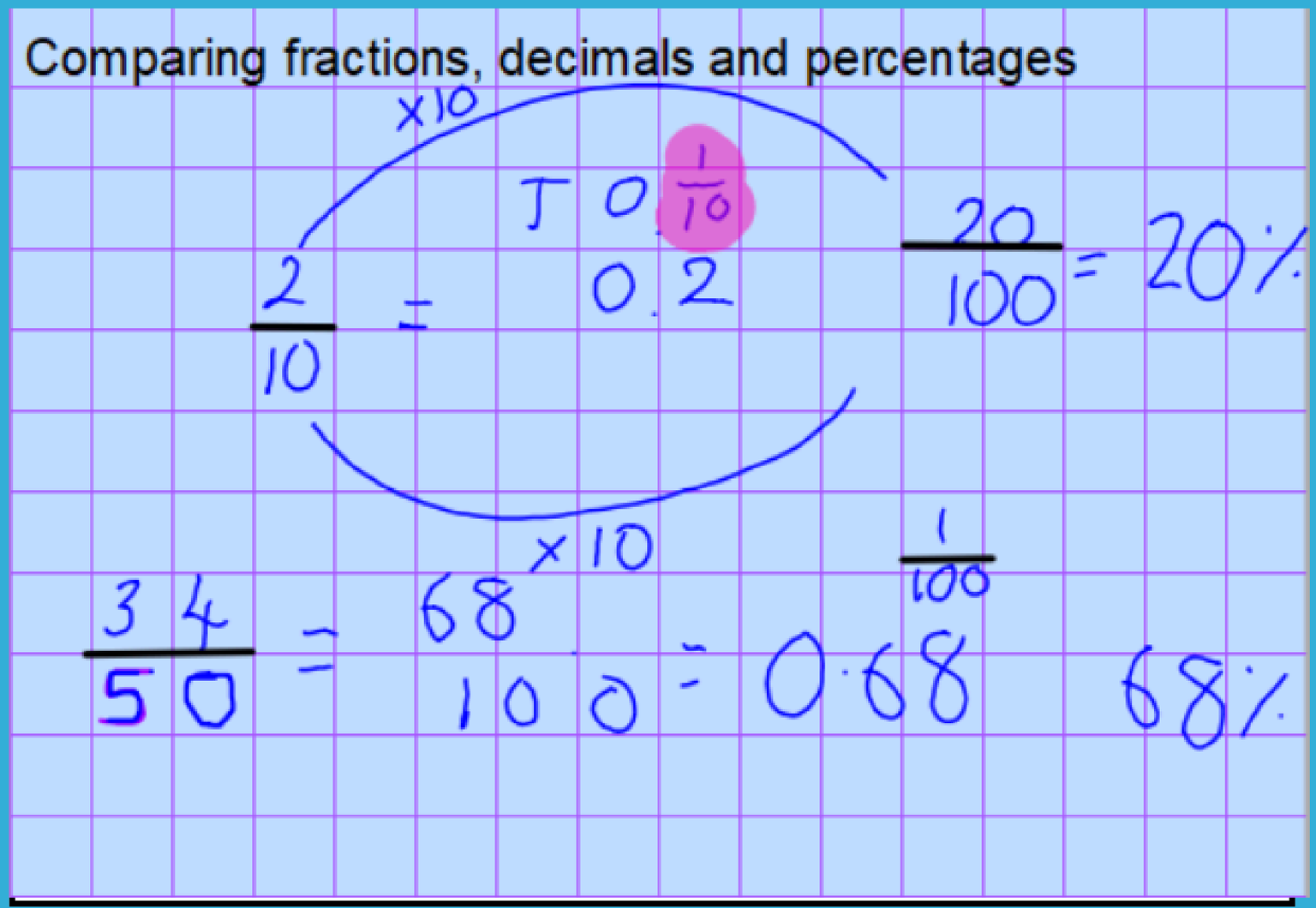
57.4

Circle the column you are rounding to.
Underline the number in the following column.
If the number is 5 or above the circled number goes up.
If the number is 4 or below the circled number stays the same.
The rounded answer stops at the circled number.

Key tip: round to the circled number only. Label the place value columns

Rounding decimals

Comparing fractions, decimals and percentages



Convert them to the same format. Once they are in the same format order by size.

<u>Key tip: Decimals are easiest to order.</u>
To convert a fraction to a decimal divide the numerator by the denominator.
Percentage means out of 100, divide by 100 to get the decimal equivalent.

<u>Comparing Fractions, Decimals and Percentages</u>

BIDMAS - Order of operations

1. Brackets - ( )
2. Indices - squared or cubed
3. Division and Multiplication
4. Addition and Subtraction

$(2^2 + 3) \times 4$

$(4 + 3) \times 4$

$7 \times 4 = 28$

Calculate bracket first then indices. Then multiply.

Key tip: complete step by step to ensure that all the calculation is completed in order.

Bidmas