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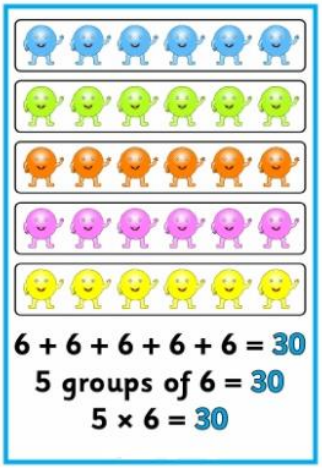
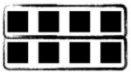
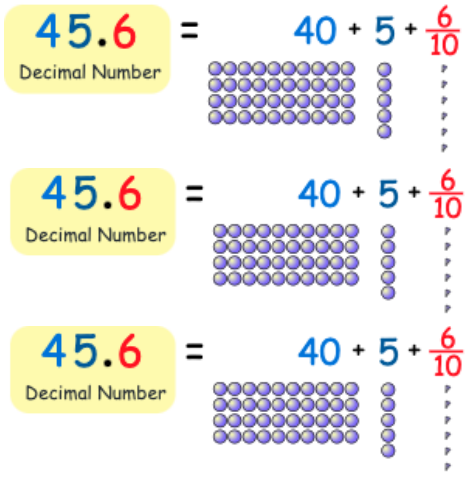
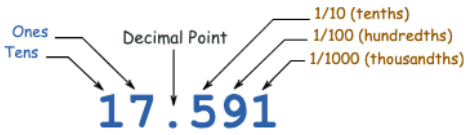
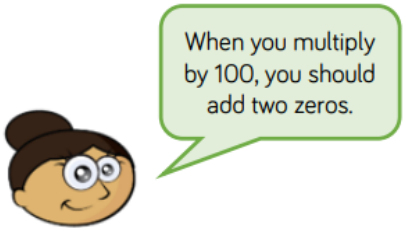
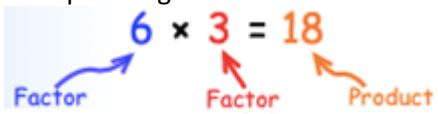
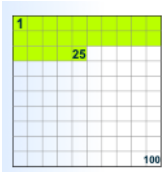
Power Maths Key Vocabulary
Year 6 – Block B

Key Vocabulary	Explanation of Terms	Example Question(s)
multiply	To multiply means to add equal groups. When we multiply, the number of things in the group increases. The basic idea of multiplying is repeated addition: 5 multiplied by 3 is the same as 5 + 5 + 5.  	A school organises a sponsored run for charity. They want to raise £2,600 to help towards building a new library. 124 runners enter the race. Each runner gets sponsored £22. Will this be enough for the school to hit their target? (Yes – £2,728) 215 people buy tickets for the school play. They pay £1.95 each for the tickets. How much money did the school raise? (£419.25) The recipe for 1 banana and raspberry smoothie needs 65g of raspberries. Sarah's mum is making smoothies for the whole class of 28 children. What is the weight of raspberries she will need in grams. What is the weight in kilograms? (1,820g, 1.820kg)
divide	To divide is to separate or be separated into equal parts. Division is the act or process of dividing anything. 8 ÷ 2 = 4 8 divided into 2 groups gives a result of 4 per group 	There are 120 chocolates, if I divide these equally between 3 people, how many will each person get? (40) Billy bought four boxes of cakes for his birthday party. Each box contained eight cakes. He carefully put five cakes on each of six plates. How many cakes were left over? (2)
decimal **decimal place**	A decimal number can be defined as a number whose whole number part and the fractional part is separated by a decimal point.	Write down the value of the 3 in the following numbers: 0.53 362.44 739.8 0.013 3,420.98 (3 hundredths, 3 hundreds, 3 tens, 3 thousandths, 3 thousand)

	The dot in a decimal number is called a decimal point. The digits following the decimal point show a value smaller than one. 	32.4 × ? = 3,240 (100) 1.562 × 1,000 = ? (1,562) ? × 1,000 = 208 (0.208) 4.3 × ? = 86 (20) Four children are thinking of four different numbers. 3.454 4.445 4.345 3.54 **Teddy**: "My number has four hundredths." **Alex**: "My number has the same amount of ones, tenths and hundredths." **Dora**: "My number has less ones that tenths and hundredths." **Jack**: "My number has 2 decimal places." Match each number to the correct child. (Teddy: 4.345 Alex: 4.445 Dora: 3.454 Jack: 3.54)
place value	A number can have many digits and each digit has a special place and value. Starting from the right the first digit will be at ones place and the second digit at tens place. 	In 17.591, what is the value of the 9? (The 9 is in the "hundredths" place, so its place value is 0.09.)  Do you agree? Explain your thinking. (no - when you multiply by 100 the digits move two places to the left)
product	The product of two numbers is the answer when 2 numbers have been multiplied together. 	What is the product of 10 and 12? 10 x 12 = (120) What is the product of 8 and 6? 8 x 6 = (48) What is the product of 6 and 8 and 3? (144)

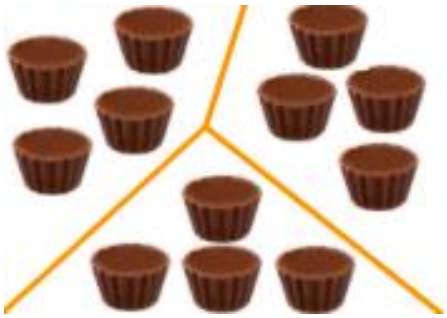
<table>
<tr><td></td><td></td><td>What is the product of 10 and 6.6? (66)</td></tr>
<tr><td>percent (%)

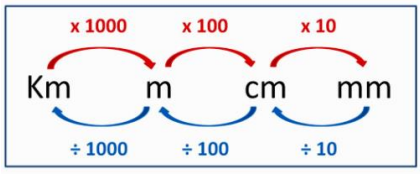
percentage</td><td>Percentage is a number or ratio which can be represented as a fraction of 100.
 

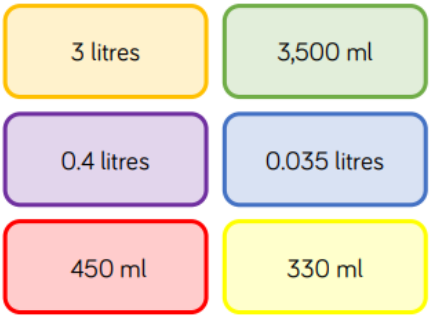
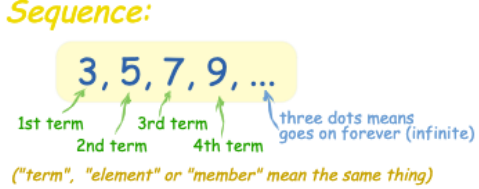
Parts per 100
The symbol is %
Example: 25% means 25 per 100 (25% of this box is green)

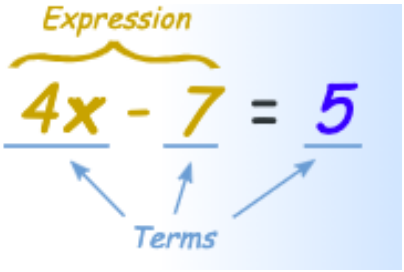
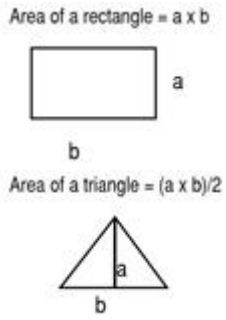
The symbol (%) is used to denote percentage</td><td>A decorator buys 24 litres of paint. When he finishes painting, there is 25% of the paint left. How much paint is left? (6 litres)

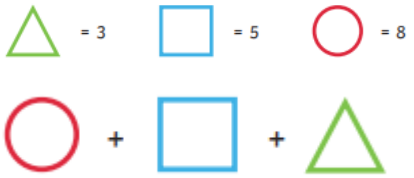
Some children hold a bake sale for a local charity and raise £90. 10% comes from selling biscuits. 50% of the remaining money comes from selling chocolate cakes. How much is made from selling chocolate cakes? (£40.50)

A library has 2,500 books. 40% of the books are fiction. How many books are not fiction books? (1,500 books)</td></tr>
<tr><td>share</td><td>To share is to split objects into equal parts or groups.
 
Above the chocolates have been shared into 3 groups. Sharing can be done by dividing.</td><td>Michael shares 128 marbles between 8 people, how many marbles will each person receive? (16)

Susie said that 494 bananas could be shared equally between twenty-nine monkeys with no bananas spare. Do a calculation to find out if this is correct. (no – there would be some left over)</td></tr>
<tr><td>convert</td><td>To convert is to change a value or expression from one form to another.
 
</td><td>There are ___ mm in one centimetre.
There are ___ cm in one metre.
There are ___ m in one kilometre.
Use these facts to complete the table.
<table><tr><th>mm</th><th>cm</th><th>m</th><th>km</th></tr><tr><td>44,000</td><td></td><td></td><td></td></tr><tr><td></td><td>2,780</td><td></td><td></td></tr><tr><td></td><td></td><td>15.5</td><td></td></tr><tr><td></td><td></td><td></td><td>1.75</td></tr></table></td></tr>
</table>

		There are ___ grams in one kilogram. There are ___ kilograms in one tonne. Use these facts to complete the tables. <table><tr><th>g</th><th>kg</th></tr><tr><td>1,500</td><td></td></tr><tr><td></td><td>2.05</td></tr><tr><td>1,005</td><td></td></tr></table> <table><tr><th>kg</th><th>tonnes</th></tr><tr><td>1,202</td><td></td></tr><tr><td></td><td>4.004</td></tr><tr><td>125</td><td></td></tr></table> Put these capacities in order, starting with the smallest.  (0.035 litres, 330ml, 0.4 litres, 450ml, 3 litres, 3,500 ml)
order	The arrangement of things in relation to each other according to a particular sequence or pattern. Above, the shapes are in order of how many sides they have.	Put the following numbers in order from smallest to largest: 1.9, 1.09, 19, 0.19, 1. (0.19, 1, 1.09, 1.9, 19) Put these numbers in order of size, smallest to largest: 9,482,169 9,284,169 9,248,169 9,248,196 9,284,196 (9,248,169 9,248,196 9,284,169 9,284,196 9,482,169)
sequence	A list of numbers or objects in a special order. 	Insert the next 2 numbers in the following sequence: 40, 80, 160, 320, _____, _____ (640, 1,280) In this sequence, the rule to get to the next number is multiply by 2 and then add 3. Write the missing numbers: _____, 25, 53, _____ (11, 109)
algebra	Algebra uses letters or other symbols in place of values (numbers). The symbols (represent quantities without fixed values, known as variables.	x + 3 = 7 ('x' is used in place of a number that we don't yet know. In this case the value of x can be worked out by

	Examples: x + y = y + x x + -x = 0 **3 + 2a = 17**	subtracting 3 from 7. Therefore x = 4) ½ n + 1 = 8 What is the value of n? (14)
expression	An expression is a sentence with a minimum of two numbers and at least one math operation. The operation can be addition, subtraction, multiplication, and division. 	Michael has 6 more apples than Brian, come up with an expression to show how many apples Michael has. (M = B + 6) Two children write expressions to describe their pocket money for the week. Are their expressions correct or incorrect? If an expression is incorrect, write the correct expression. I spent half my pocket money going to the cinema. Then, I washed the car and earned £7. y ÷ 2 + 7 (✓) I spent £3 of my pocket money on a magazine. Then, I completed my paper round and earned £10. 10(y − 3) ((y-3) + 10)
formula	A formula is a mathematical rule or relationship that uses letters to represent amounts which can be changed, these are called variables. The formula for calculating the volume of a box is: V = L x W x H V stands for volume, L for length, W for width, H for height 	Emily and Becky are sisters. This formula can be used to calculate Becky's age compared to Emily's age. E + 4 = B. E stands for Emily and B stands for Becky. When Emily is 11 how old will Becky be? (15) When Becky is 17, how old will Emily be? (13) A gardener calculates the perimeter of a garden to work out how much fencing is needed. She uses this formula: l + w + l + w. Simplify this formula. (2l + 2w)

substitute	To substitute means to insert values/numbers in place of letters.	x + 25 = y. What will y = if x =9? (9 + 25 = y, 34 = y) Substitute the values given for each shape to work out the values of each expression.  (16) (-5)
equation	An equation always has an equals sign, it tells us that one side is equal to the other. 	What is the value of x? x + 4 = 3x – 6 (x = 5) Calculate the value of the letter in each equation: 20 – 4h + 4 (4) 3i + 5 = 11 (2) 14 = 6j – 4 (3) 2k – 5 = 5 (5)
metric	The metric system is a system of measurement that uses the meter, litre, and gram as base units of length (distance), capacity (volume), and weight (mass).	Using a metric measurements, can you measure the length of your table? In metric units, what is your height and weight? Ron's dog is about $\frac{1}{4}$ of the height of the door. Ron is three times the height of his dog. Estimate the height of Ron and his dog. (Door = 2 m (200 cm), Dog = 50 cm, Ron = 150 cm)
imperial	Miles, feet and inches are old units of length. These are known as imperial units of length but are not now commonly used in maths.	What is the length of this desk in feet and inches?

<table>
<tr>
<td></td>
<td>There are 12 inches in a foot.

An inch is roughly equal to 2.5 centimetres.

Imperial units:
Length: inches, feet, yards
Area: square feet, acres
Weight: pounds, ounces
Volume: gallons, pints</td>
<td>How many pounds of butter do you have?

How many pounds are there in 4kg? (roughly 8)

Use the table to convert between the measurements below.

<table>
<tr><td>1 foot</td><td>=</td><td>12 inches</td></tr>
<tr><td>1 pound (lb)</td><td>=</td><td>16 ounces</td></tr>
<tr><td>1 stone</td><td>=</td><td>14 pounds</td></tr>
<tr><td>1 gallon</td><td>=</td><td>8 pints</td></tr>
<tr><td>1 inch</td><td>≈</td><td>2.5cm</td></tr>
</table>

<table>
<tr><td>3 feet</td><td>=</td><td>_____ inches</td></tr>
<tr><td>_____ pounds</td><td>=</td><td>64 ounces</td></tr>
<tr><td>6 stone</td><td>=</td><td>_____ pounds</td></tr>
<tr><td>_____ gallons</td><td>=</td><td>16 pints</td></tr>
<tr><td>8 inches</td><td>≈</td><td>_____ cm</td></tr>
</table>
</td>
</tr>
<tr>
<td>mass</td>
<td>This is a measure of how much matter is in an object.

Mass is measured in grams (g) and kilograms (kg) (metric units).</td>
<td>Bob buys 2,500g of onions for his restaurant. How many kilograms is this? (2.5kg)

To bake cakes for a party, Ron used these ingredients:

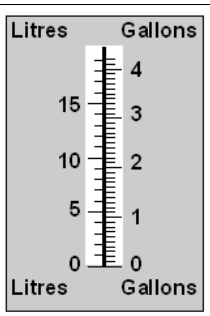
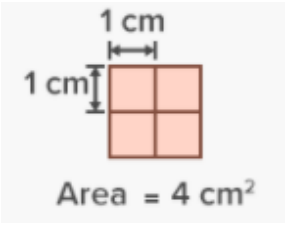
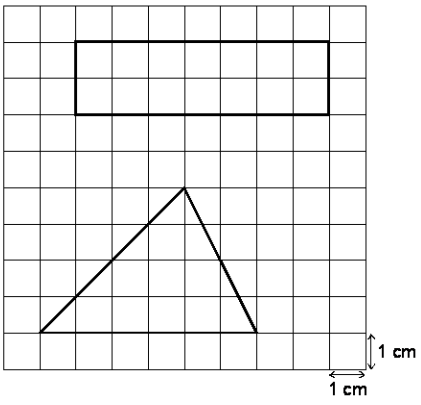
600 g caster sugar
0.6 kg butter
18 eggs (792 g)
$\frac{3}{4}$ kg self-raising flour
10 g baking powder

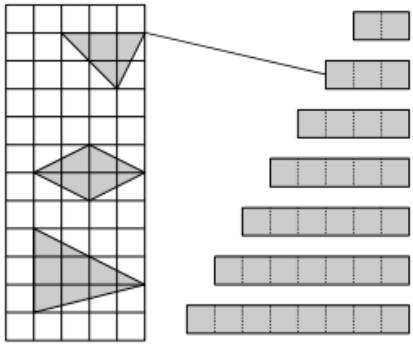
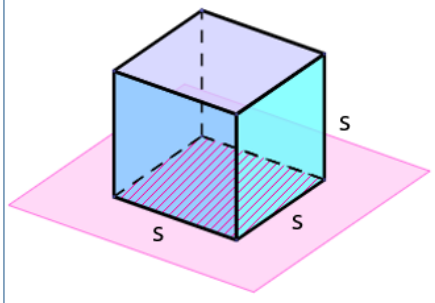
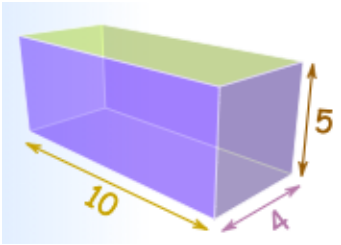
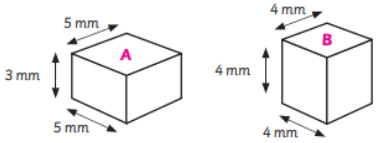
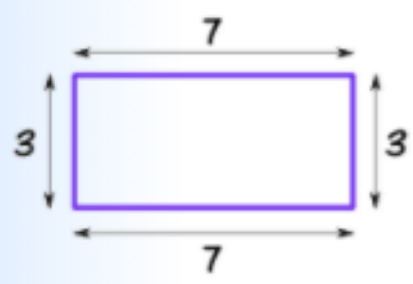
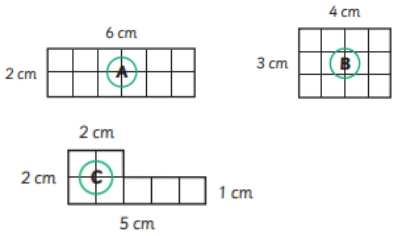
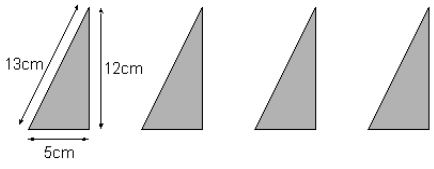
What is the total mass of the ingredients? (2,752g or 2.752kg)</td>
</tr>
<tr>
<td>capacity

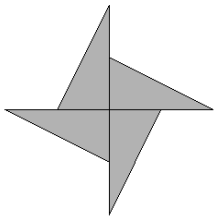
millilitre (ml)

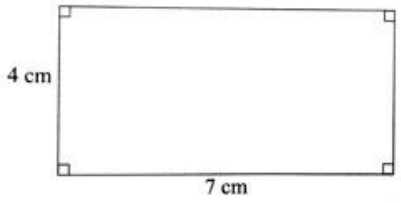
litre (l)</td>
<td>Capacity is the amount something can hold.

This is measure in litres (l) and millilitres (ml).
 </td>
<td>What is the capacity of your water bottle?</td>
</tr>
</table>

		 At a petrol station there is a scale for converting litres and gallons. Approximately how many litres are there in 3 gallons? (13 or 14) The tap can fill up the bath tub in 22 minutes. The capacity of the bath tub is 176l. How much water is added to the tub per minute? (8l)
length/distance **millimetre (mm)** **centimetre (cm)** **metre (m)** **kilometre (km)**	Length measures how far it is from one end to another, or from one point to another. The length of an object is the greatest of the two or three dimensions of an object. The metric system of length is shown below: 1km = 1000m 1m = 100cm 1cm = 10mm	Lucy swims 3km every day. The pool is 50m in length. How many lengths does she swim in a week? (420) A car travels 15m every second. How far does it travel in 4 minutes? (3,600m or 3.6km)
area	The area is the size of a surface or the amount of space inside the boundary of a 2-dimensional object such as a triangle or a square.  The area of a shape can be measured by comparing the shape to squares of a fixed size. The standard unit of area is the square metre (written as m2), which is the area of a square whose sides are one metre long.	Work out the area of each shape:  (rectangle – 14cm², triangle – 12cm²) Draw one line from each shape to the rectangle which has the same area.

		
volume **height** **width** **length**	Volume is the amount of 3-dimensional space something takes up (also known as the capacity). Volume = length x width x height Volume is measured in cubic units. **Volume of Cube**  Volume of cube with side lengths s $V = s \times s \times s = s^3$	Calculate the volume of the shape:  (200cm³) Which of these cuboids A or B has the biggest volume?  (Cuboid A) The volume of a cuboid is 36 cm³. It is 3 cm long and 3 cm wide. What is the height of the cuboid? (4cm)
perimeter	The perimeter is the distance around a two dimensional (2D) shape. This can be calculated by adding all the sides of a shape together.  The perimeter of this shape is 3 + 7 + 3 + 7 = 20.	Which shapes have the same perimeter? (shapes B & C)  Lindy has 4 triangles, all the same size. 

		She uses them to make a star.  What is the area of the star? ($80cm^3$)
estimate	To estimate is to find a value that is close enough to the right answer, usually with some thought or calculation involved. Estimates can also be used to check how sensible our answers are to questions.	Estimate 121 x 11. To estimate this in my head I can think of 120 x 10 = 1200. (My accurate answer is going to be close to 1200.) Estimate the sum by rounding each number to the nearest hundred. 1) Tom and Sam both collect marbles. Tom has collected 3,125 and Sam has collected 5,611 marbles. How many marbles do they own together? (8,700) 2) Tim grew 9,219 watermelons and Mike grew 5,856 watermelons this year. How many watermelons did they grow together? (15,100) 3) There are 5,359 crayons in the stockroom. Benny placed 2,498 more crayons in the stockroom. How many crayons are now in the stockroom? (7,900)
ratio	In mathematics, a ratio indicates how many times one number contains another. For example, if there are eight oranges and six lemons in a bowl of fruit, then the ratio of oranges to lemons is eight to six. Similarly, the ratio of lemons to oranges is 6:8 and the ratio of oranges to the total amount of fruit is 8:14. 3:2	The ratio of boys to girls in a class is 3:1 (There are 3 boys for every 1 girl) If there is 9 girls in the class, how many boys is there? (27) In a bag of beads there were 3 red beads for every blue bead. Altogether there were 80 blue beads. How many red beads were there? (240) On a plane there were 6 airline workers and 240 passengers. If each

		worker looked after the same number of passengers, how many passengers did each worker look after? (40)
scale	The scale is the ration of the length in a drawing (or model) to the length on the real thing.	A map of a classroom has a scale of 1:100. If a table on the map measures as 15cm long, how long would the table be in real life? (1,500cm or 15m) The figure below shows a scale drawing of a bill board. A scale of 1:150 is used in the drawing. Calculate the area of the bill board.  ($63m^2$)