

Year 5

Problem solving

- measurement
- geometry
- statistics

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Introduction

This pack features eleven units covering the problem-solving aspects of year 5 maths. Each unit includes comprehensive activities, differentiated to three levels, based on the measurement, geometry and statistics problem-solving objectives in the year 5 maths curriculum. Also included are example sections for whole class scaffolded work, investigations, word problems, teaching notes and step-by-step answers. Within each unit there are three levels of exercises, A, B, C, which follow support, core and extension according to the following:

Set A is for the support [S] group

Set B is for the core [C] group

Set C is for the extension [E] group

The questions in the example sections use the bracketed symbols, [S], [C] and [E], to indicate the level of the work.

We hope you enjoy using this pack. If you have any questions, please get in touch: email support@teachitprimary.co.uk or call us on 01225 788851. Alternatively, you might like to give some feedback for other Teachit Primary members - you can do this by adding a comment on the [Y5 Problem solving - number](#) page on Teachit Primary (please log in to access this).

Unit 3 - Measurement

Mass problems

In this unit, you will:

- use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.

Remember: k for 'kilo'; t for 'tonne' and g for 'gram'

$$1 \text{ g} = 1000 \text{ mg}$$

$$1 \text{ kg} = 1000 \text{ g}$$

$$1 \text{ t} = 1000 \text{ kg}$$

Whole class examples:

1.

Metric:	a small sheet of paper	a 1 l bottle of cola	a car
			
	gram	kilogram	tonne

- a. Circle the object that is the heaviest. Write them in order of size starting with the lightest. [5]

i.



cat



spider



horse



mouse

ii.



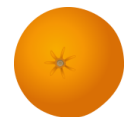
helicopter



£2 coin



bumble bee



orange

b. Choose 'grams', 'kilograms' or 'tonnes' to fill in the blanks. [S]

i. The weight of a dog is 7	
ii. The weight of a rhinoceros is 2	
iii. The weight of an apple is 180	
iv. The weight of a spider is 2	

2. Compare the measurements using <, > or =. [C]

a. 5 kg		900 g	b. 2500 g		3 kg
c. 1.75 t		1750 kg	d. 14 kg		4300 g

3. Convert the following metric units: [C]

a. 2 kg to g		b. 2.5 t to kg	
c. 46 g to kg		d. 170 kg to t	
e. 3 g to mg		f. 675 mg to g	

4. A small bar of chocolate weighs 40 grams. Estimate the weight of the large bar. [C]



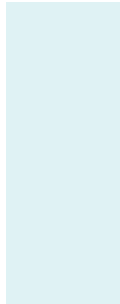
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5. Philip is overweight. He is 103 kg. His aim is to lose 400 g per week. If he manages to do this, how many weeks will it be until he gets below 100 kg? [E]

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Unit 3 - Set A:

1. Circle the object that is the heaviest. Write these in order of size starting with the lightest.



bar of chocolate



carton of juice



pencil



bunch of bananas

2. Choose 'grams', 'kilograms' or 'tonnes' to fill in the blanks.

- a. The weight of a car is about 1000
- b. The weight of a £1 coin is about 9
- c. The weight of a can of beans is 415
- d. The weight of an elephant is 4

3. Compare the measurements using $<$, $>$ or $=$.

a. 5 kg

5000 g

b. 350 g

3 kg

c. 2 t

1950 kg

d. 3 g

1100mg

4. Convert the following metric units:

a. 3 kg to g

b. 4 t to kg

c. 4000 g to kg

d. 1500 kg to t

e. 3.7 kg to g

f. 870 g to kg

g. 2 g to mg

h. 545 mg to g

5. Daniel buys $\frac{1}{2}$ kilogram of carrots. Katy buys 450 grams of carrots.

- a. Who bought the greater amount of carrots?



- b. Katy then decided that she needed 1 kg of carrots. How much more does she need to buy? Write your answer in grams.

Teachit sample

6.

A bowl of Jason's favourite breakfast cereal contains about 60 g of muesli per serving. His mother bought a new box for him. If the contents of the box weigh 1.25 kg, how many servings will he be able to eat?



7. A shop fills a box full of toys to send to a customer. Each toy weighs 120 g. When they filled the box, it weighed 4 kg (including the box) which was overweight. What is the minimum number of toys that would need to be removed for the weight of the box to drop to below 3 kg?

Unit 3 - Measurement: Answers

Mass problems

For progression, children can be guided as follows:

Support	Core
Set A Q3 → Set B Q1	Set B Q2 → Set C Q1
Set A Q4 → Set B Q2	Set B Q3-6 → Set C Q3-7
Set A Q5 → Set B Q3 & 4	Set B Q7 → Set C Q2

For estimating size (Set A Q1 and Q2), encourage some discussion about the relative sizes - 'Could a bumble bee be that small?', 'I never knew that an elephant weighed that much'.

When converting units (Set A Q3-5; all of Sets B and C), the children should be encouraged to use their own multiplying/division techniques. However, for those who struggle with these operations, it is advisable to reinforce the choice of operation first and attempt the 'build up'.

Questions Set B Q6 and Set C Q4-7 allow the children to decide which unit to work with. If they are unsure, then suggest changing all units to the smaller one (in this case kg to g), as it removes the added issue of working with decimals.

Whole class examples:

1.

a.

- i. cat (4 kg) spider (5 g) horse (500 g) mouse (19 g)
- ii. helicopter (5 t) £2 coin (12 g) bumble bee (5 g) orange (140 g)

b.

- i. The weight of a dog is 7
- ii. The weight of a rhinoceros is 2
- iii. The weight of an apple is 180
- iv. The weight of a spider is 2

kilograms

tonnes

grams

grams

2.

a.	5 kg	>	900 g	b.	2500 g	<	3 kg
c.	1.75 t	=	1750 kg	d.	14 kg	>	4300 g

3.

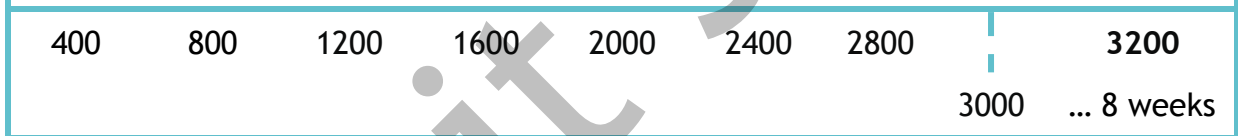
a.	2 kg =	$2 \times 1000 \text{ g} = 2000 \text{ g}$	b.	2.5 t =	$2.5 \times 1000 \text{ kg} = 2500 \text{ kg}$
c.	46 g =	$46 \div 1000 \text{ kg} = 0.046 \text{ kg}$	d.	170 kg =	$170 \div 1000 \text{ t} = 0.17 \text{ t}$
e.	3 g =	$3 \times 1000 \text{ mg} = 3000 \text{ mg}$	f.	675 mg =	$675 \div 1000 \text{ g} = 0.675 \text{ g}$

4.

Small bar consists of 10 squares = 40 g. One square = $40 \div 10 = 4 \text{ g}$ each.
 Large bar consists of 16 squares. Weight = $16 \times 4 \text{ g} = 64 \text{ g}$.

5.

Philip needs to lose 3 kg ($103 - 100$). $3 \text{ kg} = 3 \times 1000 \text{ g} = 3000 \text{ g}$.
 We need to find how many '400 g' we can get from 3000 g.



Unit 3 - Set A: Answers

1. In order of size:

pencil bar of chocolate carton of juice bunch of bananas

2.

- a. The weight of a car is about 1000
- b. The weight of a £1 coin is about 9
- c. The weight of a can of beans is 415
- d. The weight of an elephant is 4

kilograms
grams
grams
tonnes

3.

- a. 5 kg = 5000 g
- b. 350 g < 3 kg
- c. 2 t > 1950 kg
- d. 3 g > 1 100mg

4.

- a. 3 kg $3 \times 1000 \text{ g} = 3000 \text{ g}$
- b. 4 t $4 \times 1000 \text{ kg} = 4000 \text{ kg}$
- c. 4000 g $4000 \div 1000 \text{ kg} = 4 \text{ kg}$
- d. 1500 kg $1500 \div 1000 \text{ t} = 1.5 \text{ t}$
- e. 3.7 kg $3.7 \times 1000 \text{ g} = 3700 \text{ g}$
- f. 870 g $870 \div 1000 \text{ kg} = 0.87 \text{ kg}$
- g. 2 g $2 \times 1000 \text{ mg} = 2000 \text{ mg}$
- h. 545 mg $545 \div 1000 \text{ mg} = 0.545 \text{ mg}$

5.

- a. $\frac{1}{2} \text{ kg} = \frac{1}{2} \times 1000 \text{ g} = 500 \text{ g} (> 450 \text{ g})$. So Daniel bought more.
- b. $1 \text{ kg} = 1 \times 1000 \text{ g} = 1000 \text{ g}$. $1000 \text{ g} - 450 \text{ g} = 550 \text{ g}$ more.