Mathletics

Series F Teacher

Volume, Capacity and Mass

Series F – Volume, Capacity and Mass

Contents

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Series F – Volume, Capacity and Mass

Pages 1–2

1a ÷

b ×, 1,000

2a 2 l

b 1.5 l

c 0.5 l

d 5 l

3a 8,000 ml

b 2,500 ml

c 9,500 ml

d 600ml

e 5,500 ml

f 200 ml

4a l

b ml

c l

d ml

e l

f ml

5a

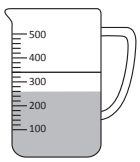
b

c

d

6a 800 ml

b



7a True

b True

c True

d False

e False

f True

g False

h False

Pages 3–4

1a Observe students.

b 12 × 1 × 4, 12 × 4 × 1, 12 × 2 ×2

c 12 × 2 × 2, 12 × 1 × 4, 12 × 4 ×1

d, e Answers will vary.

f Answers will vary.
Sample answer:

Width	Height	Length
4	4	3
4	2	6
2	4	6
1	6	8
8	1	6
6	8	1

2a 5 × 1 × 1 = 5 m^3

b 3 × 2 × 3 = 18 m^3

c 6 × 2 × 1 = 12 m^3

d 3 × 2 × 4 = 24 m^3

e 3 × 2 × 1 = 6 m^3

f 3 × 2 × 6 = 36 m^3

3a m^3

b Yes

c Yes

d m^3

e Yes

f Yes

g Yes

h m^3

Page 5

What to do

Observe students.

What to do next

Answers will vary.

Possible dimensions include:

10 cm × 10 cm × 40 cm = 4,000 cm^3 = 4 l

20 cm × 20 cm × 10 cm = 4,000 cm^3 = 4 l

Page 6

Box 1: 10 cm × 10 cm × 1 cm = 100 cm^3

Box 2: 8 cm × 8 cm × 2 cm = 128 cm^3

Box 3: 6 cm × 6 cm × 3 cm = 108 cm^3

Pages 7–8

1 Answers will vary.

2 Drawings will vary.

3 Munch Muesli: £4.00 for 500 g;
£4.00 × 2 = £8.00

Fruity Flakes: £8.00 for 800 g;
£8.00 ÷ 8 = £1.00 for 100 g so it is £10 per kg

4a 20

b 12

c 75

d 100

e 40

f 155

g 20

h 45

5a 150 ml = 150 ✓ g

b 25 ml = 250 ✗ g *25 g*

c 500 ml = 500 ✓ g

d 10 ml = 10 ✓ g

e 300 ml = 30 ✗ g *300 g*

f 2 l = 200 ✗ g *2,000 g*

Series F – Volume, Capacity and Mass

Pages 9–10

1a 17

b 86

c 73

d 9

2

Decimal notation	Grams	Kilograms and grams
4.25 kg	4,250 g	4 kg 250 g
1.8 kg	1,800 g	1 kg 800 g
3.75 kg	3,750 g	3 kg 750 g

3a 8

b 40

c 80

d 16

e No

4a 22 kg; 2 kg; £24

b 23 kg; 3 kg; £42

c 27 kg; 2 kg; £36

d 23.5 kg; 0.5 kg; £7.50

5a Yes – 2 kg over (24 kg per person)

b No (19.7 kg)

c 5.5 kg

Pages 11–12

1a 4,000 kg

b 5,000 kg

c 2,000 kg

d 8,000 kg

e 3,000 kg

f 3,500 kg

g 20,000 kg

h 15,000 kg

i 25,000 kg

j 45,000 kg

k 50,000 kg

l 80,000 kg

2a 1 t

b 5 t

c 4 t

d 8 t

2e 6 t

f 2 t

g 9 t

h 10 t

i 15 t

j 50 t

k 25 t

l 65 t

3 8.5; 3.019; 5.854; 10.298; 28.131; 55.75(0)

4a 1.2t

b 7 t

c 6 t

d–g Answers will vary. Teacher check.

5a 13 trucks

b 72 t

c 3.84 t

d No – it will weigh 6 t

Page 13

1a 1

b 26

c 1.8

d 180

e 4.5

f 0.6

2 0.75

20

20

10

45

0.3

Page 14

What to do

There are 5 potatoes and 5 carrots. We know the weight of the potatoes and need to use trial and error to work out the possible weight of the carrots. They must weigh less than 70 g. We can use a list to find complementary numbers.

	potatoes	carrots
1	140 g	60 g
2	280 g	120 g
3	420 g	180 g
4	560 g	240 g
5	700g	300 g
6	840 g	360 g

What to do next

2 potatoes (2 × 260 g) = 520 g (carrots 480 g)

3 potatoes (3 × 260 g) = 780 g (carrots 220 g)

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Gertie weighs 4,140 kg.

As three of the guesses are within 30 kg of each other, the closer guesses must all sit either at the top or the bottom of the range.

Since the difference between 70 and 90 is 20, two of the guesses must also have a difference of 20. These two numbers are 4,120 and 4,160.

Volume and capacity

Name _____

1 **Write the following as litres:**

a 3,000 ml = ☐ l

b 7,000 ml = ☐ l

c 500 ml = ☐ l

d 4,500 ml = ☐ l

2 **Write the following as millilitres:**

a 6 l = ☐ ml

b $\frac{1}{4}$ l = ☐ ml

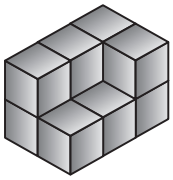
c $8\frac{1}{2}$ l = ☐ ml

d 2 l = ☐ ml

3 **How many cubic centimetre blocks will fit inside an empty box that is 6 cm long, 4 cm high and 2 cm wide?**

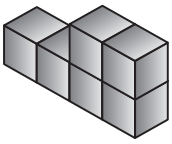
_____

4 **Label each cubic centimetre model with its volume and capacity and appropriate unit.**



Volume = _____

Capacity = _____



Volume = _____

Capacity = _____

5 **Colour the jugs to show the flowing capacities:**

a half a litre

b $\frac{1}{4}$ of a litre

c $\frac{3}{4}$ of a litre

d 900 ml

6 **Nadia made a punch where she poured in 500 ml of pineapple juice, 700 ml of soda water and 400 ml of apple juice. How much punch did she make?**

_____ l _____ ml

Skills	Not yet	Kind of	Got it
• Converts between millilitres and litres			
• Uses appropriate unit to measure volume and capacity			
• Reads calibrations on a 1 litre jug			

Mass

Name _____

1 **Write g or kg to show what to use to find the mass of each object:**

a a baby ☐ **b** a pencil ☐ **c** a packed suitcase ☐

d a die ☐ **e** a TV ☐ **f** an adult ☐

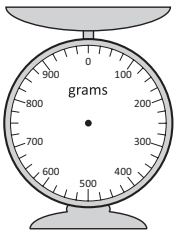
2 **Write the following as grams:**

a 5 kg = ☐ g **b** $3\frac{1}{2}$ kg = ☐ g **c** 16 kg = ☐ g

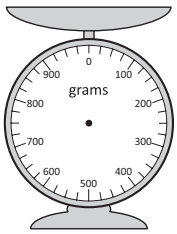
3 **Write the following as kilograms:**

a 7,000 g = ☐ kg **b** 4,000 g = ☐ kg **c** 500 g = ☐ kg

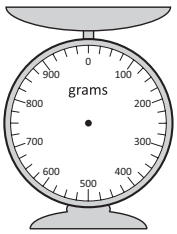
4 **Draw the following items on the scale and the arrow to show the mass:**



425 g can of soup



700 g loaf of bread



50 g chocolate bar

5 **Complete this kilograms to tonnes conversion table:**

Kilograms	1,765	3,890		1,235		2,456
Tonnes			7		8.765	

6 **Draw a line between the metric measurement and its approximate imperial equivalent:**

0.6 l	6.5 kg	30 g	0.5 kg
1 ounce	1 pint	1 pound	1 stone

Skills	Not yet	Kind of	Got it
• Converts between grams and kilograms			
• Reads calibrations on a 1 kilogram scale			
• Converts between kilograms and tonnes			
• Uses appropriate unit to measure mass			
• Converts between metric and imperial			

Series F – Volume, Capacity and Mass – Student Progress Record

Name_____ Class _____ Date _____

What went well: _____

_____

_____

_____

What I need to improve: _____

_____

_____

_____

Series F – Volume, Capacity and Mass – Student Progress Record

Name_____ Class _____ Date _____

What went well: _____

_____

_____

_____

What I need to improve: _____

_____

_____

_____

Series F – Volume, Capacity and Mass

ASSESSMENT ANSWERS

Page 3

1a 3

b 7

c 0.5

d 4.5

2a 6,000

b 250

c 8,500

d 2,000

3 48 blocks

4a 10 cm^3

b 6 cm^3

c 10 ml

d 6 ml

5a

b

c

d

6 1.6; 1,600

Page 4

1a kg

b g

c kg

d g

e kg

f kg

2a 5,000

b 3,500

c 16,000

3a 7

b 4

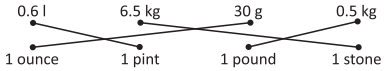
c 0.5

4 Drawings will vary.

5 Kilograms: 7,000; 8,765

Tonnes: 1.765; 3.89(0); 1.235; 2.456

6



Series F – Volume, Capacity and Mass

Topic	Reference	Strand	Objective
Volume and capacity	5M5	Measurement	Convert between different units of metric measure (eg: kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre).
Volume and capacity	5M8	Measurement	Estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water).
Volume and capacity	5M9d	Measurement	Use all four operations to solve problems involving measure (e.g. volume) using decimal notation including scaling.
Mass	5M5	Measurement	Convert between different units of metric measure (eg: kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)."
Mass	5M6	Measurement	Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.
Mass	5M9c	Measurement	Use all four operations to solve problems involving measure (e.g. mass) using decimal notation including scaling.