Mathematics
STANDARD 4
MEASUREMENT: Mass/Weight

Students will:

Understand the relationship between units of mass/weight.

Solve problems involving mass/weight.

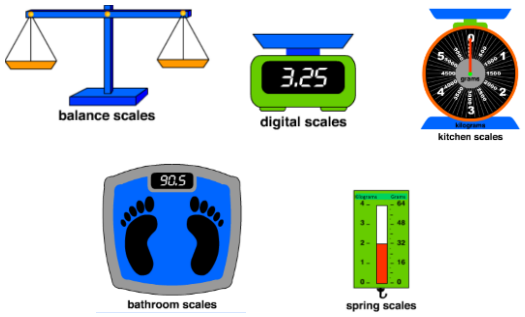
KEY POINTS

The unit of measurement of mass is the kilogram.

One thousand grams are equal to one kilogram.

Operations of addition, subtraction, multiplication, and division can be applied to mass.

Solve real-life problems involving mass/weight, number, and money.

Facts to Remember	Illustrations/Example
Mass is a measure of how heavy an object is. Mass can be measured using a scale. The unit of mass is the kilogram(kg). The kilogram is used for large masses while grams are used for smaller masses. A liter of water usually has a mass of 1 kilogram. 1 kg = 1 000 g $\frac{1}{2}$ kg = 500 g $\frac{1}{4}$ kg = 250 g $\frac{1}{10}$ kg = 100 g $\frac{1}{5}$ kg = 200 g $\frac{3}{4}$ kg = 750 g To convert kilogram to grams, multiply by 1 000 or use the facts above. To convert grams to kilograms, divide by 1 000 or use the information above.	There are many different types of scales.  <u>Example</u> Convert 5 kg to grams. Solution 5 kg = 5 x 1 000 g = 5 000 g. <u>Example</u> Convert $3\frac{3}{5}$ kg to grams. Solution 3 kg = 3 x 1 000 g = 3 000g $\frac{1}{5}$ kg = 200 g $\frac{3}{5}$ kg = 3 x 200g = 600 g $3\frac{3}{5}$ kg = 3 000 g + 600 g = 3 600 g <u>Example</u> Convert 1 250 g to kilograms. Solution 1 250 g= 1 000 g+ 250 g = 1 kg + $\frac{1}{4}$ kg = $1\frac{1}{4}$ kg.

WORKSHEET

EXERCISE 1

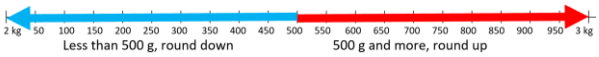
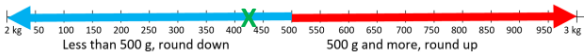
Convert the following masses to grams.

1. 6 kg
2. 25 kg
3. $4\frac{1}{2}$ kg
4. $7\frac{3}{4}$ kg
5. $8\frac{1}{4}$ kg
6. $11\frac{2}{5}$ kg
7. $20\frac{3}{10}$ kg
8. $12\frac{3}{5}$ kg
9. $15\frac{9}{10}$ kg
10. $19\frac{3}{4}$ kg

EXERCISE 2

Convert the following masses to kilograms.

1. 7 000 g
2. 38 000 g
3. 14 500 g
4. 47 250 g
5. 35 750 g
6. 21 300 g
7. 18 700 g
8. 52 100 g
9. 60 400 g
10. 10 800 g

Facts to Remember	Illustrations/Examples
Rounding to the nearest kilograms. If the number of grams in the mass is greater than or equal to 500, then you round **up** to the next kilogram. If the number of grams is less than 500, then you round **down** to the next kilogram.	 Example Round 2kg 425 g to the nearest kilogram. Solution  The 425 g is less than 500 g so we round down. Answer: 2 kg.
If the mass is represented as a fraction of a kilogram, then we round up to the nearest kilogram if the fraction is one half or more. Otherwise, round down to the nearest kilogram.	Example Round $3\frac{3}{4}$ kg to the nearest kilogram. Solution Since $\frac{3}{4}$ kg is more than $\frac{1}{2}$ kg, we round up. Answer: 4 kg.

EXERCISE 3

Approximate the following masses to the nearest kilogram.

1. 17 259 g
2. 12 621 g
3. 23 534 g
4. $43\frac{2}{10}$ kg
5. $21\frac{9}{20}$ kg
6. $78\frac{13}{20}$ kg
7. $32\frac{6}{25}$ kg
8. $89\frac{4}{5}$ kg
9. $56\frac{7}{10}$ kg
10. $64\frac{1}{3}$ kg

EXERCISE 4

1. Nneka bought 2 kg of bananas, 3 kg of grapes and a pineapple which had a mass of $2\frac{1}{4}$ kg. What is the total mass of fruits that she bought?

2. Fazeer had a mass of 35 kg. He was $12\frac{1}{5}$ kg heavier than Isiah. What was their total mass?

3. Three books had a mass of $12\frac{2}{5}$ kg. One book had a mass of $3\frac{1}{5}$ kg and the other had a mass of $5\frac{1}{2}$ kg. What was the mass of the third book?

4. Tara used 1 500 g of flour to make a cake. How much flour will be needed to make 9 such cakes? Give your answer in kilograms.

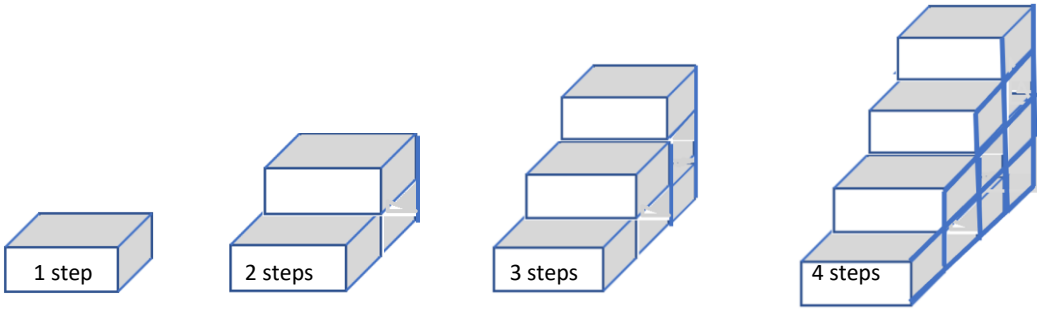
5. How many pieces of cheese each of mass 500 g can be cut from a 10 kg block of cheese?

6. From a bag of 5 kg sugar, Allan used 1 200 g to make a cake and 975 g to make some juice. How much sugar remained in the bag?

7. A teacher has some sweets. She gave half of the sweets to her class and a quarter to another teacher. She was left with 132 g of sweets. What was the mass of sweets that she had at the start?

8. Nisha had 5 kg of tomatoes. Half of the tomatoes were ripe. One fifth if the ripe tomatoes and all the green tomatoes were left on the table. The rest of the tomatoes was put in the refrigerator. What is the mass of tomatoes on the table?

9. Miguel stacked identical blocks of mass 225 to form a staircase as shown below. What is the mass of the staircase when it has 5 steps?



ANSWERS

EXERCISE 1 ANSWERS

Convert the following masses to grams.

1. 6 kg — 6 000 g
2. 25 kg — 25 000 g
3. $4\frac{1}{2}$ kg — 4 500 g
4. $7\frac{3}{4}$ kg — 7 750 g
5. $8\frac{1}{4}$ kg — 8 250 g
6. $11\frac{2}{5}$ kg — 11 400 g
7. $20\frac{3}{10}$ kg — 20 300 g
8. 12.6 kg — 12 600 g
9. 15.9 kg — 15 900 g
10. 19.75 kg — 19 750 g

EXERCISE 2 ANSWERS

1. 7 000 g — 7 kg
2. 38 000 g — 38 kg
3. 14 500 g — $14\frac{1}{2}$ kg
4. 47 250 g — $47\frac{1}{4}$ kg
5. 35 750 g — $37\frac{3}{4}$ kg
6. 21 300 g — $21\frac{3}{10}$ kg
7. 18 700 g — $18\frac{7}{10}$ kg
8. 52 100 g — $52\frac{1}{10}$ kg
9. 60 400 g — $60\frac{2}{5}$ kg
10. 10 800 g — $10\frac{4}{5}$ kg

EXERCISE 3 ANSWERS

Approximate the following masses to the nearest kilogram.

1. 17 259 g — 17 kg
2. 12 621 g — 13 kg
3. 23 534 g — 24 kg
4. 43.2 kg — 43 kg
5. 21.45 kg — 21 kg
6. 78.65 kg — 79 kg
7. 32.24 kg — 32 kg
8. 89.8 kg — 90 kg
9. $56\frac{7}{10}$ kg — 57 kg
10. $64\frac{1}{3}$ kg — 64 kg

EXERCISE 4

1. $7\frac{1}{4}$ kg
2. $57\frac{4}{5}$ kg
3. $3\frac{7}{10}$ kg
4. $13\frac{1}{2}$ kg
5. 20 pieces.
6. 2 825 g
7. 528 g
8. 3 kg
9. 3 375 g