Merit Tutoring

WORKSHEET 35

Year 6 Mathematics: Measurement

Mass (Tonnes & kg)

Focus: Conversions (g, kg, t)

Name: _____ **Date:** _____

Understanding Mass Units

Mass measures how heavy something is.

Three Common Units:

1. Gram (g): For very light objects

- Examples: A paperclip, a coin, a strawberry

2. Kilogram (kg): For everyday objects

- Examples: A person, a bag of sugar, a watermelon
- **1 kg = 1000 g**

3. Tonne (t): For very heavy objects

- Examples: A car, a truck, an elephant
- **1 t = 1000 kg**

Conversion Chart:

grams (g) $\underset{\times 1000}{\overset{\div 1000}{\rightleftarrows}}$ **kilograms (kg)** $\underset{\times 1000}{\overset{\div 1000}{\rightleftarrows}}$ **tonnes (t)**

Examples:

- 3000 g $= 3$ kg (divide by 1000)
- 2.5 t $= 2500$ kg (multiply by 1000)

Section 1: Grams and Kilograms (Fluency)

1. Convert 3000 g to kg.
(Hint: Divide by 1000)

Answer: _____

2. Convert 5000 g to kg.

Answer: _____

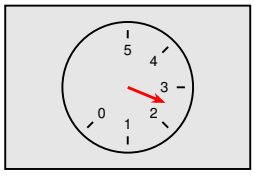
3. Convert 4.5 kg to grams.
(Hint: Multiply by 1000)

Answer: _____

4. Convert 2.8 kg to grams.

Answer: _____

5. Look at this kitchen scale:



Scale showing kg

The scale shows 2.5 kg. How many grams is this?

Answer: _____

6. Which is heavier: 3500 g or 3 kg?

Answer: _____

MASS MASTER!

Strong Ant

Why did the ant lift the feather?
Because it wanted to work on its gram-mar!

Section 2: Kilograms and Tonnes (Reasoning)

7. 1 Tonne = 1000 kg. How many kg are in 5 Tonnes?

Answer: _____

8. How many kg are in 3 Tonnes?

Answer: _____

9. A car weighs 1500 kg. Write this in Tonnes (t).

$$1500\text{ kg} \xrightarrow{\div 1000} ?\text{ t}$$

Answer: _____

10. Convert 2500 kg to Tonnes.

Answer: _____

11. Convert 0.8 t to kg.

Answer: _____

12. An elephant weighs 6 t. How many kg is this?

Answer: _____

13. Which is heavier: 2 t or 1800 kg?

Answer: _____

TONNE CHAMPION!

Heavy Hippo

What do you call a hippopotamus that studies weights?
A hippo-tonne-mus!

Section 3: Mixed Units (Challenge)

14. Put these in order from lightest to heaviest:

2 t, 500 kg, 3000 g
(Hint: Convert them all to kg first)

Answer: _____

15. Convert 0.75 t to kg.

Answer: _____

16. Convert 250 kg to Tonnes.

Answer: _____

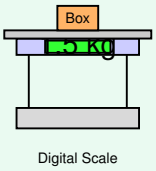
17. Which is the odd one out? Explain why.
4000 g, 4 kg, 0.4 t

Answer: _____

18. A bag weighs 2.5 kg. How many bags would make 1 tonne?
(Hint: 1 t = 1000 kg)

Answer: _____

CONVERSION KING!



Why did the scale go to school?

To learn about its weighting period!

Fantastic Work! Check your answers on the next page.

ANSWER KEY

Worksheet 35: Conversions (g, kg, t)

Section 1: Grams and Kilograms

1. 3 kg (3000 ÷ 1000 = 3)
2. 5 kg (5000 ÷ 1000 = 5)
3. 4500 g (4.5 × 1000 = 4500)
4. 2800 g (2.8 × 1000 = 2800)
5. 2500 g (2.5 × 1000 = 2500)
6. 3500 g is heavier (3500 g = 3.5 kg, which is more than 3 kg)

Section 2: Kilograms and Tonnes

7. 5000 kg (5 × 1000 = 5000)
8. 3000 kg (3 × 1000 = 3000)
9. 1.5 t (1500 ÷ 1000 = 1.5)
10. 2.5 t (2500 ÷ 1000 = 2.5)
11. 800 kg (0.8 × 1000 = 800)
12. 6000 kg (6 × 1000 = 6000)
13. 2 t is heavier (2 t = 2000 kg, which is more than 1800 kg)

Section 3: Mixed Units

14. 3000 g (3 kg), 500 kg, 2 t (2000 kg) - in order: 3000 g, 500 kg, 2 t
15. 750 kg (0.75 × 1000 = 750)
16. 0.25 t (250 ÷ 1000 = 0.25)
17. 0.4 t is the odd one out (4000 g = 4 kg, but 0.4 t = 400 kg)
18. 400 bags (1000 ÷ 2.5 = 400)

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WORKSHEET 36

Year 6 Mathematics: Measurement

Mass (Tonnes & kg)

Focus: Solving Mass Problems

Name: _____ **Date:** _____

Calculating with Mass

Adding and Subtracting Mass:
Golden Rule: Units must be the SAME before you add or subtract!
Example 1: Addition
Calculate: 800 kg + 1.5 t
Step 1: Convert to same units: 1.5 t = 1500 kg
Step 2: Add: 800 kg + 1500 kg = 2300 kg
Step 3: Convert if needed: 2300 kg = 2.3 t
Example 2: Subtraction
Calculate: 1.2 t - 500 kg
Step 1: Convert to kg: 1.2 t = 1200 kg
Step 2: Subtract: 1200 kg - 500 kg = 700 kg
Step 3: Convert if needed: 700 kg = 0.7 t
Real World Applications:

- Truck weight limits
- Shipping costs (often by weight)
- Recycling amounts
- Farm produce (crops, livestock)

Pricing by Mass:
If something costs $2 per kg, then 500g costs:
500g = 0.5 kg, so 0.5 × $2 = $1

Section 1: Addition and Subtraction (Fluency)

1. Calculate: 250 kg + 800 kg. Give your answer in Tonnes.

Answer: _____

2. Calculate: 1500 kg + 2500 kg. Give your answer in Tonnes.

Answer: _____

3. Calculate: 1.2 t - 500 kg
(Hint: Convert 1.2 t to kg first)

Answer: _____

4. Calculate: 2000 kg - 0.5 t

Answer: _____

5. Add these masses: 300 kg + 0.8 t + 200 kg
Give your answer in kg.

Answer: _____

6. Calculate: 3 t - 1200 kg
Give your answer in tonnes.

Answer: _____

CALCULATION CHAMPION!

Calculator Bear

Why did the kilogram go to the party?
Because it wanted to have a ton of fun!

Section 2: Real World Weights (Reasoning)

7. A truck can carry 3 Tonnes. It is loaded with 2500 kg of bricks. How much more weight can it carry?

Answer: _____

8. A bag of rice is 5 kg. How many bags are needed to make 1 Tonne?

Answer: _____

9. A shipping container has a weight limit of 10 t. It currently holds: - 3.5 t of furniture - 2500 kg of boxes - 1.8 t of machinery
Is the container over the limit? By how much?

Answer: _____

10. An empty truck weighs 2.5 t. When loaded, it weighs 5.2 t. What is the mass of the load?

Answer: _____

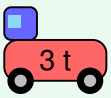
11. Three parcels weigh 450 kg, 0.6 t, and 380 kg. What is their total mass in tonnes?

Answer: _____

12. A farmer harvests 4.5 t of wheat. He sells 2800 kg. How much wheat does he have left?
Give your answer in kg.

Answer: _____

HEAVYWEIGHT HERO!



Heavy Truck

What's a truck driver's favorite type of music?
Heavy metal!

Section 3: Pricing by Mass (Challenge)

13. Potatoes cost $2 per kg. How much does 500 g cost?
(Hint: 500 g = 0.5 kg)

Answer: _____

14. Sand costs $50 per tonne. How much does 200 kg cost?

Answer: _____

15. Apples cost $3 per kg. How much would 2.5 kg cost?

Answer: _____

16. Concrete costs $120 per tonne. A builder needs 1.5 t. How much will it cost?

Answer: _____

17. Recycling centre pays: - $0.10 per kg for aluminum - $0.05 per kg for plastic
You bring 3 kg of aluminum and 5 kg of plastic. How much money do you get?

Answer: _____

18. Challenge: Gravel costs $80 per tonne.
(a) How much does 500 kg cost? _____
(b) How many kg can you buy with $40? _____

Answers: _____

MASS MATHEMATICIAN!

Mass Champion

Why don't scientists trust atoms?
Because they make up everything, including their mass!

Outstanding Work! Check your answers on the next page.

ANSWER KEY

Worksheet 36: Solving Mass Problems

Section 1: Addition and Subtraction

1. 1.05 t or 1050 kg (250 + 800 = 1050 kg; 1050 ÷ 1000 = 1.05 t)
2. 4 t (1500 + 2500 = 4000 kg = 4 t)
3. 700 kg or 0.7 t (1.2 t = 1200 kg; 1200 - 500 = 700 kg)
4. 1500 kg or 1.5 t (0.5 t = 500 kg; 2000 - 500 = 1500 kg)
5. 1300 kg (0.8 t = 800 kg; 300 + 800 + 200 = 1300 kg)
6. 1.8 t (3 t = 3000 kg; 3000 - 1200 = 1800 kg = 1.8 t)

Section 2: Real World Weights

7. 500 kg or 0.5 t (3 t = 3000 kg; 3000 - 2500 = 500 kg)
8. 200 bags (1 t = 1000 kg; 1000 ÷ 5 = 200)
9. No, under the limit by 200 kg (Total: 3.5 + 2.5 + 1.8 = 7.8 t; 10 - 7.8 = 2.2 t under)
10. 2.7 t (5.2 - 2.5 = 2.7 t)
11. 1.43 t (450 kg + 600 kg + 380 kg = 1430 kg = 1.43 t)
12. 1700 kg or 1.7 t (4.5 t = 4500 kg; 4500 - 2800 = 1700 kg)

Section 3: Pricing by Mass

13. $1 (500 g = 0.5 kg; 0.5 × $2 = $1)
14. $10 (200 kg = 0.2 t; 0.2 × $50 = $10)
15. $7.50 (2.5 × $3 = $7.50)
16. $180 (1.5 × $120 = $180)
17. $0.55 (Aluminum: 3 × $0.10 = $0.30; Plastic: 5 × $0.05 = $0.25; Total: $0.55)
18. (a) $40 (500 kg = 0.5 t; 0.5 × $80 = $40); (b) 500 kg ($40 is 0.5 t; 0.5 × 1000 = 500 kg)

Phenomenal Achievement!

You've mastered Mass (Tonnes & kg)!
From grams to tonnes - you're a weight wizard!