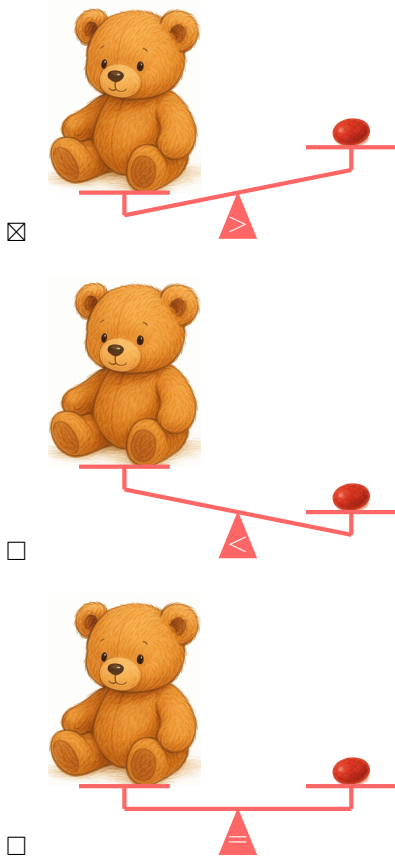


A WHAT IS A MASS?

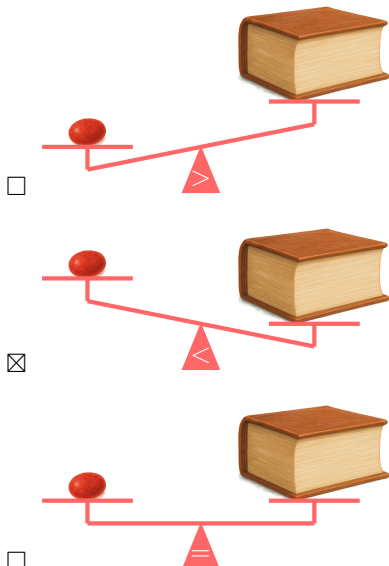
A.1 COMPARING OBJECT MASSES

MCQ 1: Compare the mass of a candy and a teddy bear.
Choose the correct picture



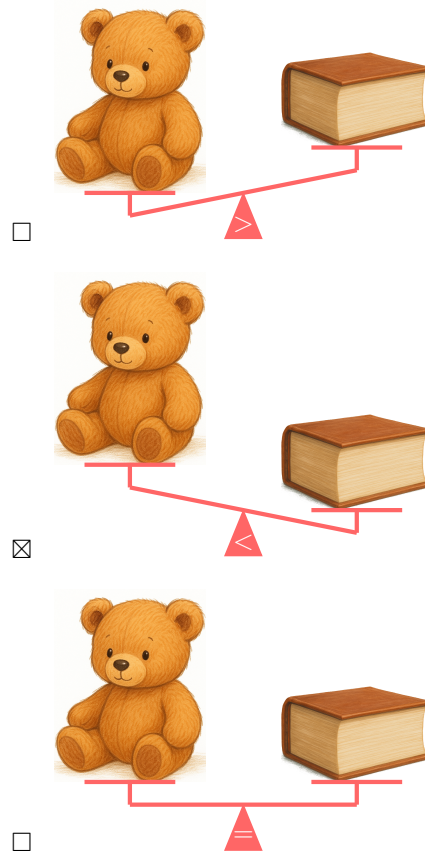
Answer: The teddy bear is much heavier than the candy. On a balance scale, the teddy bear's side will go down, and the candy's side will go up. So, the correct picture is the one where the teddy bear's side is lower, showing that the candy is lighter than the teddy bear.

MCQ 2: Compare the mass of a book and a candy.
Choose the correct picture



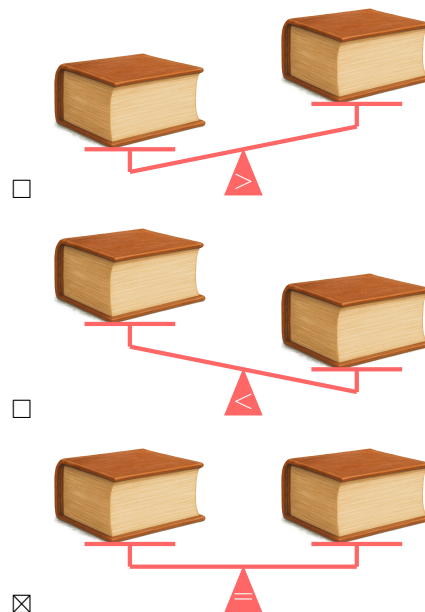
Answer: The book is much heavier than the candy. On a balance scale, the book's side will go down, and the candy's side will go up. So, the correct picture is the one where the book's side is lower, showing that the candy is lighter than the book.

MCQ 3: Compare the mass of a teddy bear and a book.
Choose the correct picture



Answer: The book is heavier than the teddy bear.

MCQ 4: Compare the mass of a book and another book.
Choose the correct picture



Answer: The two books are the same, so they weigh the same. On a balance scale, both sides will stay level because neither book is heavier than the other.

B STANDARD UNITS OF MASS

B.1 CHOOSING THE MASS UNIT

MCQ 5: Which unit will be used to measure the mass of a 6-year-old boy?

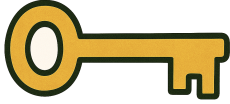


Choose 1 answer:

- ☐ Milligrams
- ☐ Grams
- ☒ Kilograms
- ☐ Tonnes

Answer: Kilograms will be used to measure the mass of a 6-year-old boy. A 6-year-old boy has a mass of about 30 kg. Milligrams and grams are too small for a boy's mass, and tonnes are too large.

MCQ 6: Which unit will be used to measure the mass of keys?



Choose 1 answer:

- ☐ Milligrams
- ☒ Grams
- ☐ Kilograms
- ☐ Tonnes

Answer: Grams will be used to measure the mass of keys. A set of keys has a mass of about 50 g. Milligrams are too small for keys, while kilograms and tonnes are too large.

MCQ 7: Which unit will be used to measure the mass of a truck?



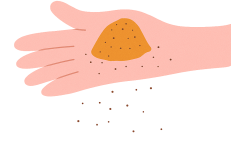
Choose 1 answer:

- ☐ Milligrams
- ☐ Grams
- ☐ Kilograms

☒ Tonnes

Answer: Tonnes will be used to measure the mass of a truck. A truck has a mass of about 5 tonnes (or 5000 kg). Milligrams, grams, and kilograms are too small for a truck's mass.

MCQ 8: Which unit will be used to measure the mass of a grain of sand?



Choose 1 answer:

- ☒ Milligrams
- ☐ Grams
- ☐ Kilograms
- ☐ Tonnes

Answer: Milligrams will be used to measure the mass of a grain of sand. A grain of sand has a mass of about 1 mg. Grams, kilograms, and tonnes are too large for a grain of sand's mass.

MCQ 9: Which unit will be used to measure the mass of a washing machine?



Choose 1 answer:

- ☐ Milligrams
- ☐ Grams
- ☒ Kilograms
- ☐ Tonnes

Answer: Kilograms will be used to measure the mass of a washing machine. A washing machine has a mass of about 60 kg. Milligrams and grams are too small for a washing machine, and tonnes are typically used for much larger objects, like a car.

B.2 CHOOSING THE BEST ESTIMATE

MCQ 10: Choose the best estimate for the mass of a drop of water.



- ☐ 0.5 mg
- ☐ 5 mg
- ☒ 50 mg

Answer: The best estimate for the mass of a drop of water is 50 mg. A typical drop of water from a dropper has a volume of about 0.05 ml, and since 1 ml of water has a mass of 1 g (or 1000 mg), a drop weighs about 0.05 g, which is 50 mg.

MCQ 11: Choose the best estimate for the mass of a 6-year-old boy.



- ☐ 3.5 kg
☒ 35 kg
☐ 350 kg

Answer: The best estimate for the mass of a 6-year-old boy is 35 kg. A 6-year-old boy typically has a mass of about 20 to 40 kg, depending on his height and build, so 35 kg is a reasonable estimate.

MCQ 12: Choose the best estimate for the mass of a truck.



- ☐ 0.5 t
☒ 5 t
☐ 50 t

Answer: The best estimate for the mass of a truck is 5 t.

MCQ 13: Choose the best estimate for the mass of a full can of 33 cl.

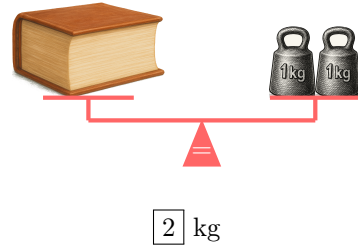


- ☐ 3.5 g
☐ 35 g
☒ 350 g

Answer: The best estimate for the mass of a full can of 33 cl is 350 g. A typical 33 cl can of soda, including the liquid and the aluminum can, has a mass of about 350 g. The liquid inside is around 330 g (since 33 cl of water weighs 330 g), and the can itself weighs about 15–20 g, totaling approximately 350 g.

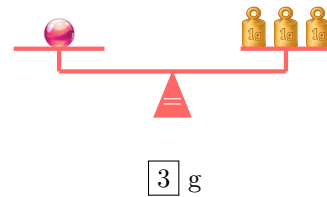
B.3 MEASURING OBJECT MASSES

Ex 14: What is the mass of the book?



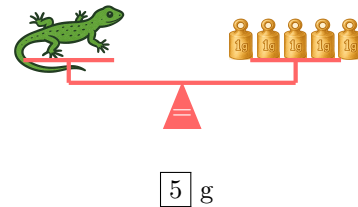
Answer: The book weighs 2 kg. The balance scale shows the book on one side and two 1 kg masses on the other side. Since the scale is level, the book's mass is equal to the two masses: $1 \text{ kg} + 1 \text{ kg} = 2 \text{ kg}$.

Ex 15: What is the mass of the marble?



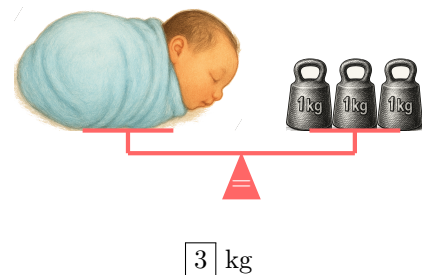
Answer: The marble weighs 3 g. The balance scale shows the marble on one side and three 1 g masses on the other side. Since the scale is level, the marble's mass is equal to the three masses: $1 \text{ g} + 1 \text{ g} + 1 \text{ g} = 3 \text{ g}$.

Ex 16: What is the mass of the lizard?



Answer: The lizard weighs 5 g. The balance scale shows the lizard on one side and five 1 g masses on the other side. Since the scale is level, the lizard's mass is equal to the five masses: $1 \text{ g} + 1 \text{ g} + 1 \text{ g} + 1 \text{ g} + 1 \text{ g} = 5 \text{ g}$.

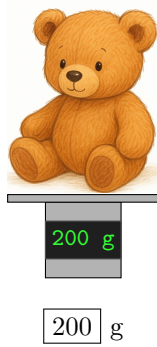
Ex 17: What is the mass of the baby?



Answer: The baby weighs 3 kg. The balance scale shows the baby on one side and three 1 kg masses on the other side. Since the scale is level, the baby's mass is equal to the three masses: $1 \text{ kg} + 1 \text{ kg} + 1 \text{ kg} = 3 \text{ kg}$.

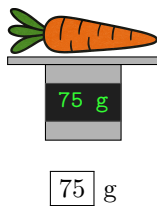
B.4 MEASURING MASSES USING A DIGITAL BALANCE

Ex 18: What is the mass of the teddy bear?



Answer: The teddy bear weighs 200 g.

Ex 19: What is the mass of the carrot?



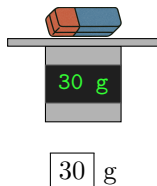
Answer: The carrot weighs 75 g.

Ex 20: What is the mass of the full can of 33 cl?



Answer: The full can of 33 cl weighs 350 g.

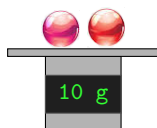
Ex 21: What is the mass of the eraser?



Answer: The eraser weighs 30 g.

B.5 FINDING MASS OF MULTIPLE ITEMS

Ex 22:



- What is the mass of 2 marbles?

10 g

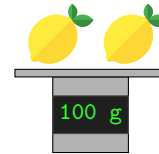
- What is the mass of 1 marble?

5 g

Answer:

- The 2 marbles weigh 10 g.
- To find the mass of 1 marble, divide the mass of 2 marbles by 2: $10 \div 2 = 5$, so 1 marble weighs 5 g.

Ex 23:



- What is the mass of 2 lemons?

100 g

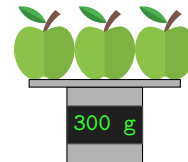
- What is the mass of 1 lemon?

50 g

Answer:

- The 2 lemons weigh 100 g.
- To find the mass of 1 lemon, divide the mass of 2 lemons by 2: $100 \div 2 = 50$, so 1 lemon weighs 50 g.

Ex 24:



- What is the mass of 3 apples?

300 g

- What is the mass of 1 apple?

100 g

Answer:

- The 3 apples weigh 300 g.
- To find the mass of 1 apple, divide the mass of 3 apples by 3: $300 \div 3 = 100$, so 1 apple weighs 100 g.

Ex 25:



- What is the mass of 3 candies?

12 g

- What is the mass of 1 candy?

4 g

Answer:

- The 3 candies weigh 12 g.
- To find the mass of 1 candy, divide the mass of 3 candies by 3: $12 \div 3 = 4$, so 1 candy weighs 4 g.

B.6 CALCULATING PRICES OF FRUITS


Ex 26: The price per kg of apples  is 2 dollars. I buy 3 kilos. What is the price?

6 dollars

Answer: To find the total price, multiply the price per kg of apples by the number of kilos:

$$\begin{aligned}\text{Total price} &= 2 \text{ dollars per kg} \times 3 \text{ kg} \\ &= 6 \text{ dollars}\end{aligned}$$

So, the price for 3 kilos of apples is 6 dollars.


Ex 27: The price per kg of lemons  is 3 dollars. I buy 4 kilos. What is the price?

12 dollars

Answer: To find the total price, multiply the price per kg of lemons by the number of kilos:

$$\begin{aligned}\text{Total price} &= 3 \text{ dollars per kg} \times 4 \text{ kg} \\ &= 12 \text{ dollars}\end{aligned}$$

So, the price for 4 kilos of lemons is 12 dollars.

Ex 28: The price per kg of oranges  is 2 dollars. I buy 5 kilos. What is the price?

10 dollars

Answer: To find the total price, multiply the price per kg of oranges by the number of kilos:

$$\begin{aligned}\text{Total price} &= 2 \text{ dollars per kg} \times 5 \text{ kg} \\ &= 10 \text{ dollars}\end{aligned}$$

So, the price for 5 kilos of oranges is 10 dollars.

Ex 29: The price per kg of cherries  is 5 dollars. I buy 4 kilos. What is the price?

20 dollars

Answer: To find the total price, multiply the price per kg of cherries by the number of kilos:

$$\begin{aligned}\text{Total price} &= 5 \text{ dollars per kg} \times 4 \text{ kg} \\ &= 20 \text{ dollars}\end{aligned}$$

So, the price for 4 kilos of cherries is 20 dollars.

C CONVERSION OF MASS UNITS

C.1 CONVERTING BETWEEN GRAMS AND KILOGRAMS

Ex 30: Convert:

$$2.5 \text{ kg} = \boxed{2500} \text{ g}$$

Answer:

- *Multiplication Method:*

$$\begin{aligned}2.5 \text{ kg} &= 2.5 \times 1000 \text{ g} \\ &= 2500 \text{ g}\end{aligned}$$

- *Conversion Table Method:*

kg			g
2.	5	0	0

So,

$$2.5 \text{ kg} = 2500 \text{ g}$$

Ex 31: Convert:

$$0.5 \text{ kg} = \boxed{500} \text{ g}$$

Answer:

- *Multiplication Method:*

$$\begin{aligned}0.5 \text{ kg} &= 0.5 \times 1000 \text{ g} \\ &= 500 \text{ g}\end{aligned}$$

- *Conversion Table Method:*

kg			g
0.	5	0	0

So,

$$0.5 \text{ kg} = 500 \text{ g}$$

Ex 32: Convert:

$$1500 \text{ g} = \boxed{1.5} \text{ kg}$$

Answer:

- *Division Method:*

$$\begin{aligned}1500 \text{ g} &= 1500 \div 1000 \text{ kg} \\ &= 1.5 \text{ kg}\end{aligned}$$

- *Conversion Table Method:*

kg			g
1.	5	0	0

So,

$$1500 \text{ g} = 1.5 \text{ kg}$$

Ex 33: Convert:

$$600 \text{ g} = \boxed{0.6} \text{ kg}$$

Answer:

- *Division Method:*

$$600 \text{ g} = 600 \div 1\,000 \text{ kg} \\ = 0.6 \text{ kg}$$

- *Conversion Table Method:*

kg			g
0.	6	0	0

So,

$$600 \text{ g} = 0.6 \text{ kg}$$

C.2 CONVERTING BETWEEN KILOGRAMS AND TONNES

Ex 34: Convert:

$$0.5 \text{ t} = \boxed{500} \text{ kg}$$

Answer:

$$0.5 \text{ t} = 0.5 \times 1\,000 \text{ kg} \\ = 500 \text{ kg}$$

Ex 35: Convert:

$$3\,500 \text{ kg} = \boxed{3.5} \text{ t}$$

Answer:

$$3\,500 \text{ kg} = 3\,500 \div 1\,000 \text{ t} \\ = 3.5 \text{ t}$$

Ex 36: Convert:

$$2.5 \text{ t} = \boxed{2\,500} \text{ kg}$$

Answer:

$$2.5 \text{ t} = 2.5 \times 1\,000 \text{ kg} \\ = 2\,500 \text{ kg}$$

Ex 37: Convert:

$$100 \text{ kg} = \boxed{0.1} \text{ t}$$

Answer:

$$100 \text{ kg} = 100 \div 1\,000 \text{ t} \\ = 0.1 \text{ t}$$

C.3 CONVERTING BETWEEN MILLIGRAMS AND GRAMS

Ex 38: Convert:

$$0.5 \text{ g} = \boxed{500} \text{ mg}$$

Answer:

$$0.5 \text{ g} = 0.5 \times 1\,000 \text{ mg} \\ = 500 \text{ mg}$$

Ex 39: Convert:

$$2.5 \text{ g} = \boxed{2\,500} \text{ mg}$$

Answer:

$$2.5 \text{ g} = 2.5 \times 1\,000 \text{ mg} \\ = 2\,500 \text{ mg}$$

Ex 40: Convert:

$$3\,500 \text{ mg} = \boxed{3.5} \text{ g}$$

Answer:

$$3\,500 \text{ mg} = 3\,500 \div 1\,000 \text{ g} \\ = 3.5 \text{ g}$$

Ex 41: Convert:

$$100 \text{ mg} = \boxed{0.1} \text{ g}$$

Answer:

$$100 \text{ mg} = 100 \div 1\,000 \text{ g} \\ = 0.1 \text{ g}$$

C.4 CONVERTING MIXED MASS UNITS

Ex 42: Convert:

$$3 \text{ kg } 200 \text{ g} = \boxed{3\,200} \text{ g}$$

Answer:

$$3 \text{ kg } 200 \text{ g} = 3 \text{ kg} + 200 \text{ g} \\ = 3\,000 \text{ g} + 200 \text{ g} \\ = 3\,200 \text{ g}$$

Ex 43: Convert:

$$8 \text{ kg } 500 \text{ g} = \boxed{8\,500} \text{ g}$$

Answer:

$$8 \text{ kg } 500 \text{ g} = 8 \text{ kg} + 500 \text{ g} \\ = 8\,000 \text{ g} + 500 \text{ g} \\ = 8\,500 \text{ g}$$

Ex 44: Convert:

$$2 \text{ kg } 500 \text{ g} = \boxed{2.5} \text{ kg}$$

Answer:

$$2 \text{ kg } 500 \text{ g} = 2 \text{ kg} + 500 \text{ g} \\ = 2 \text{ kg} + 0.5 \text{ kg} \\ = 2.5 \text{ kg}$$



Ex 45: Convert:

$$5 \text{ kg } 800 \text{ g} = \boxed{5.8} \text{ kg}$$

Answer:

$$5 \text{ kg } 800 \text{ g} = 5 \text{ kg} + 800 \text{ g} \\ = 5 \text{ kg} + 0.8 \text{ kg} \\ = 5.8 \text{ kg}$$

C.5 CALCULATING PRICES OF FRUITS

Ex 46:  The price per kg of lemons  is 4 dollars. I buy 500 g. What is the price?

2 dollars

Answer:

- **Converting:**

$$\begin{aligned} 500 \text{ g} &= 500 \div 1\,000 \text{ kg} \\ &= 0.5 \text{ kg} \end{aligned}$$

- **Finding Price:**

$$\begin{aligned} \text{Total price} &= 4 \text{ dollars per kg} \times 0.5 \text{ kg} \\ &= 2 \text{ dollars} \end{aligned}$$

Ex 47:  The price per kg of oranges  is 10 dollars. I buy 750 g. What is the price?

7.5 dollars



Answer:

- **Converting:**

$$\begin{aligned} 750 \text{ g} &= 750 \div 1\,000 \text{ kg} \\ &= 0.75 \text{ kg} \end{aligned}$$

- **Finding Price:**

$$\begin{aligned} \text{Total price} &= 10 \text{ dollars per kg} \times 0.75 \text{ kg} \\ &= 7.5 \text{ dollars} \end{aligned}$$

Ex 48:  The price per kg of apples  is 2 dollars. I buy 2 kg 500 g. What is the price?

5 dollars



Answer:

- **Converting:**

$$\begin{aligned} 2 \text{ kg } 500 \text{ g} &= 2 \text{ kg} + 500 \text{ g} \\ &= 2 \text{ kg} + 0.5 \text{ kg} \\ &= 2.5 \text{ kg} \end{aligned}$$

- **Finding Price:**

$$\begin{aligned} \text{Total price} &= 2 \text{ dollars per kg} \times 2.5 \text{ kg} \\ &= 5 \text{ dollars} \end{aligned}$$

Ex 49:  The price per kg of cherries  is 2 dollars. I buy 2 kg 600 g. What is the price?

5.2 dollars

Answer:

- **Converting:**

$$\begin{aligned} 2 \text{ kg } 600 \text{ g} &= 2 \text{ kg} + 600 \text{ g} \\ &= 2 \text{ kg} + 0.6 \text{ kg} \\ &= 2.6 \text{ kg} \end{aligned}$$

- **Finding Price:**

$$\begin{aligned} \text{Total price} &= 2 \text{ dollars per kg} \times 2.6 \text{ kg} \\ &= 5.2 \text{ dollars} \end{aligned}$$