

Unit 6 : Mass and Weight

Friendly Notes

Comparing Mass

We use these words to compare the mass of two or more objects.

as light as

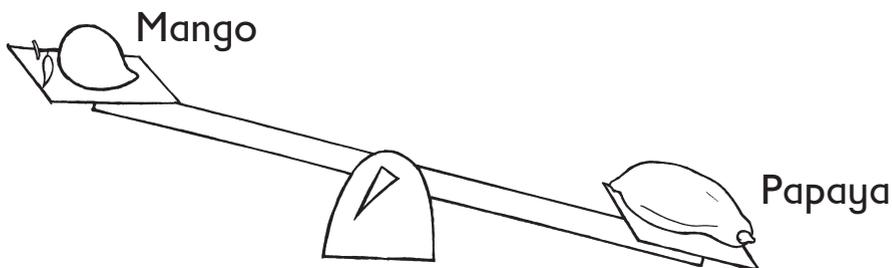
lighter than

the lightest

as heavy as

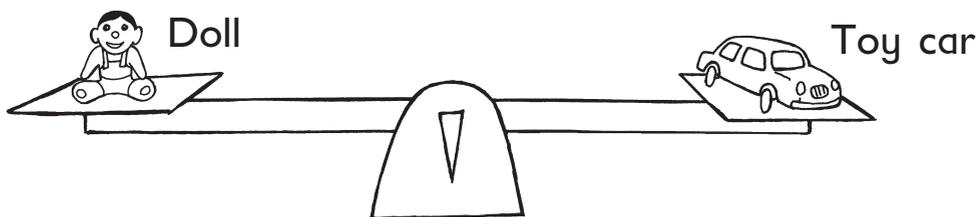
heavier than

the heaviest



The mango is **lighter than** the papaya.

The papaya is **heavier than** the mango.

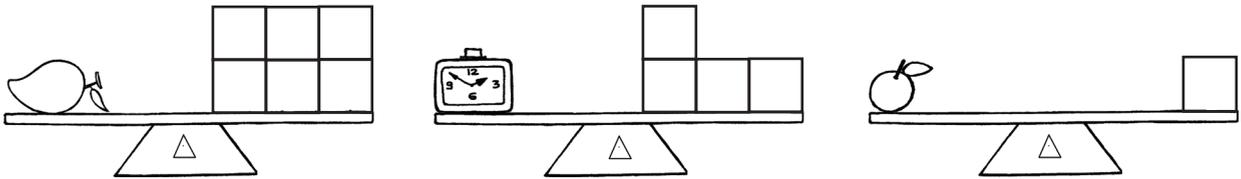


The doll is **as heavy as** the toy car.

The toy car is **as light as** the doll.

We can use objects to measure mass.

We can use blocks to measure the mass of the mango, alarm clock, and plum. Use \square as 1 unit.



The mango is as heavy as 6 \square .
The alarm clock is as heavy as 4 \square .
The plum is as heavy as 1 \square .

Each \square stands for 1 unit.



We can say that:

The mass of the mango is **6** units.

The mass of the alarm clock is **4** units.

The mass of the plum is **1** unit.

The plum is **lighter than** the mango and the alarm clock.

The plum is the **lightest**.

The mango is **heavier than** the alarm clock and the plum.

The mango is the **heaviest**.

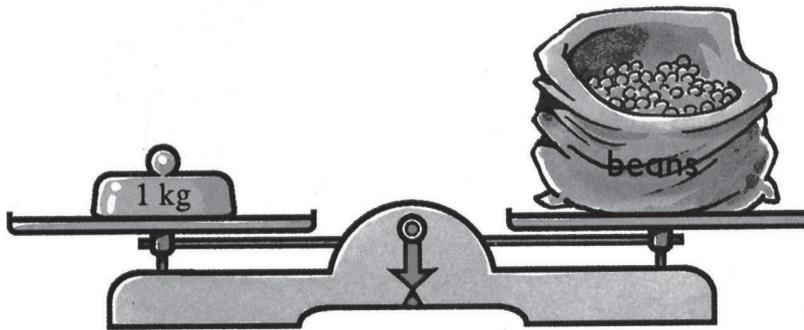
Measuring Mass in Kilograms and Grams

The kilogram and gram are units for measuring mass.
We write **kg** for kilogram and **g** for gram.

1 kilogram is heavier than 1 gram.

$$1 \text{ kg} = 1,000 \text{ g}$$

1. Measure the mass of these objects in kilograms.

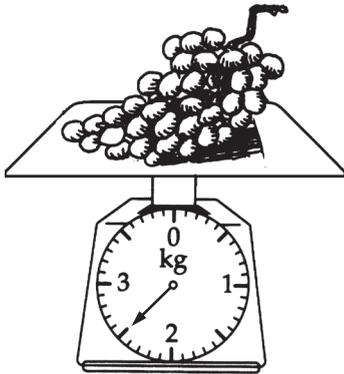


The bag of beans has mass of 1 kg.



The watermelon has mass of 3 kg.

2. Are the grapes heavier or lighter than 2 kg?

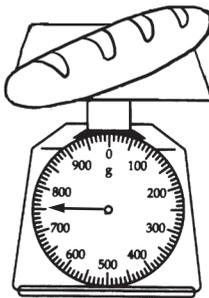
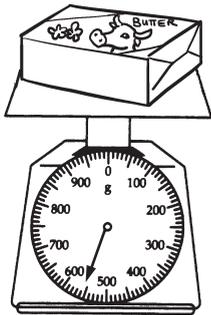


The grapes have a mass greater than 2 kg.



The grapes are heavier than 2 kg.

3. (a) Measure the mass of these objects in grams.
(b) Which is lighter, the bread or the butter?

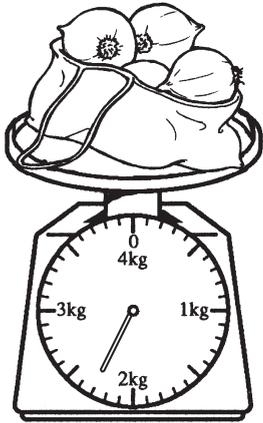


- (a) The butter has a mass of 560 g.
The bread has a mass of 750 g.

- (b) The butter is lighter.

The bread has a mass greater than the butter.



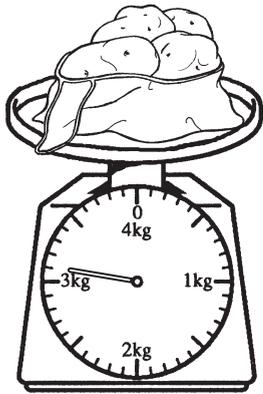


The bag of onions has a mass of 2 kg 300 g.

The bag of onions weighs 2,300 g.

$$\begin{aligned} 2 \text{ kg} &= 2,000 \text{ g} \\ 2 \text{ kg } 300 \text{ g} &= 2,000 \text{ g} + 300 \text{ g} \end{aligned}$$





The bag of potatoes has a mass of 3 kg 100 g.

$$3 \text{ kg} = 3,000 \text{ g}$$
$$3 \text{ kg } 100 \text{ g} = 3,000 \text{ g} + 100 \text{ g}$$

The bag of potatoes weighs 3,100 g.

$$3,100 - 2,300 = 800$$

The bag of potatoes is 800 g heavier than the bag of onions.



Measuring Weight in Pounds and Ounces

The pound and ounce are units for measuring weight.

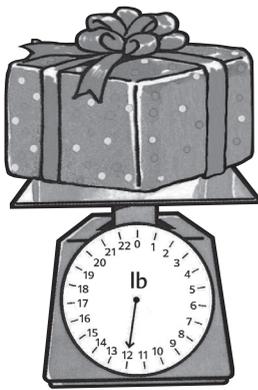
We write **lb** for pound and **oz** for ounce.

1 pound is heavier than 1 ounce.

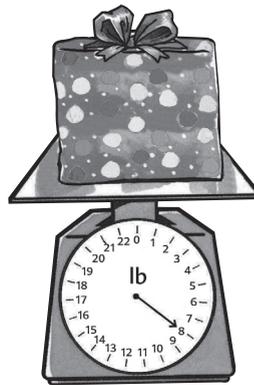
1 ounce is heavier than 1 gram.

1 pound is lighter than 1 kilogram.

1. Measure the weight of the boxes in pounds.
Which box is heavier?



Box A



Box B

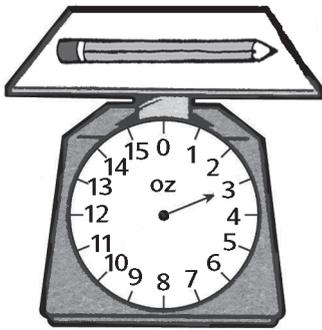
Box A weighs 12 lb.

Box B weighs 8 lb.

Box A weighs 4 lb more than Box B.

Box A is heavier.

2. Measure the weight of the pencil in ounces.



The pencil weighs 3 oz.

3. Mr. Brown weighs 140 lb.
Mrs. Brown weighs 30 lb less than Mr. Brown.
(a) What is Mrs. Brown's weight?
(b) What is their total weight?

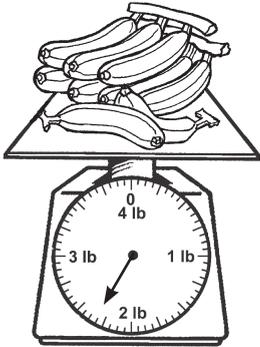
(a) $140 \text{ lb} - 30 \text{ lb} = 110 \text{ lb}$
Mrs. Brown's weight is 110 lb.

(b) $140 \text{ lb} + 110 \text{ lb} = 250 \text{ lb}$
Their total weight is 250 lb.

Pounds and Ounces

The pound (lb) and ounce (oz) are units of weight.

$$1 \text{ lb} = 16 \text{ oz}$$



The weight of the bananas is 2 lb 5 oz.

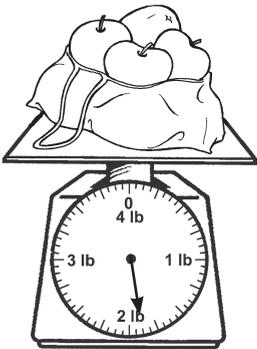
$$1 \text{ lb} = 16 \text{ oz}$$

$$2 \text{ lb} = 16 \times 2 \\ = 32 \text{ oz}$$

$$2 \text{ lb } 5 \text{ oz} = 32 \text{ oz} + 5 \text{ oz}$$



The bananas weigh 37 oz.



The weight of the bag of apples is 1 lb 14 oz.

$$1 \text{ lb} = 16 \text{ oz}$$

$$1 \text{ lb } 14 \text{ oz} = 16 \text{ oz} + 14 \text{ oz}$$



The bag of apples weighs 30 oz.

$$37 - 30 = 7$$

The bananas weigh 7 oz more than the bag of apples.

Word Problems

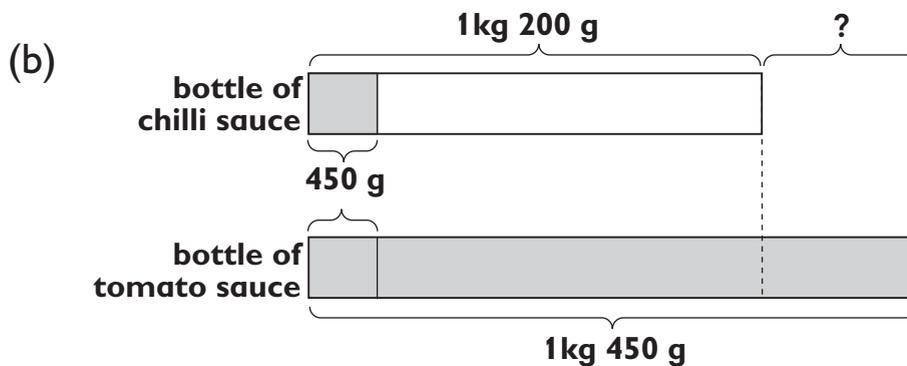
We can use models to solve word problems on mass and weight.

1. The mass of a bottle of chilli sauce is 1 kg 200 g.
The mass of a bottle of tomato sauce is 1 kg 450 g.
The mass of a each empty bottle is 450 g.
- (a) How many grams of chilli sauce are there in the bottle?
- (b) How much heavier is the bottle of tomato sauce than the chilli sauce?

(a) $1 \text{ kg } 200 \text{ g} = 1,000 \text{ g} + 200 \text{ g}$
 $= 1,200 \text{ g}$

$$1,200 \text{ g} - 450 \text{ g} = 750 \text{ g}$$

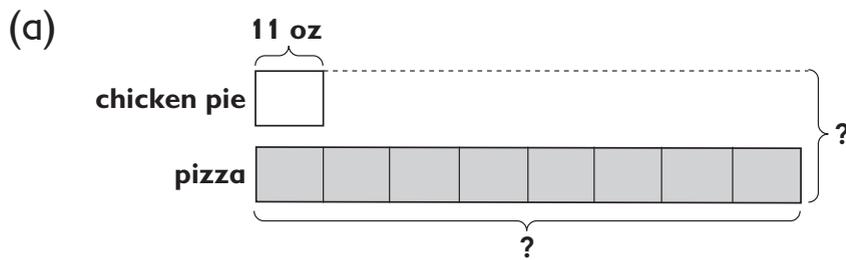
There are 750 g of chilli sauce in the bottle.



$$1 \text{ kg } 450 \text{ g} - 1 \text{ kg } 200 \text{ g} = 250 \text{ g}$$

The bottle of tomato sauce is 250 g heavier than the bottle of chilli sauce.

2. A chicken pie weighs 11 oz.
A pizza is 8 times as heavy as the chicken pie.
- (a) What is the weight of the pizza in pounds and ounces?
(b) What is the total weight of the chicken pie and pizza in ounces?



$$11 \times 8 \text{ oz} = 88 \text{ oz}$$

$$= 5 \text{ lb } 8 \text{ oz}$$

1 lb = 16 oz
 $88 - 16 = 72$
 $72 - 16 = 56$
 $56 - 16 = 40$
 $40 - 16 = 24$
 $24 - 16 = 8$
 I can subtract 16 five times from 88 and have 8 left over.
 So, 88 oz = 5 lb 8 oz

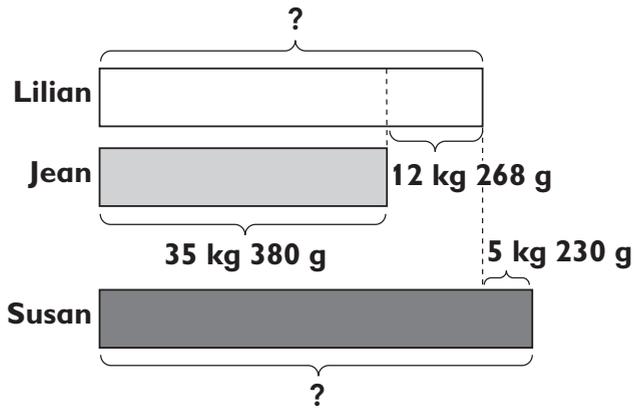
The weight of the pizza is 5 lb 8 oz.



(b) $11 \text{ oz} + 88 \text{ oz} = 99 \text{ oz}$

The total weight of the chicken pie and the pizza is 99 oz.

3. Lilian is 12 kg 268 g heavier than Jean.
 Jean's mass is 35 kg 380 g.
 Lilian is 5 kg 230 g lighter than Susan.
 Find Susan's mass in kilograms and grams.



$$35 \text{ kg } 380 \text{ g} \xrightarrow{+ 12 \text{ kg}} 47 \text{ kg } 380 \text{ g} \xrightarrow{+ 268 \text{ g}} 47 \text{ kg } 648 \text{ g}$$

$$35 \text{ kg } 380 \text{ g} + 12 \text{ kg } 268 \text{ g} = 47 \text{ kg } 648 \text{ g}$$

Lilian's mass is 47 kg 648 g.

$$47 \text{ kg } 648 \text{ g} + 5 \text{ kg } 230 \text{ g} = 52 \text{ kg } 878 \text{ g}$$

Susan's mass is 52 kg 878 g.

