

Compound measures

[CONTENTS](#)

Worked example

An object travels a distance of 20 metres in 4 seconds.
Calculate its average speed.

Your turn

An object travels a distance of 40 metres in 4 seconds.
Calculate its average speed.

10 m/s

Worked example

An object travels at an average speed of 5 m/s for 4 seconds. How far did it travel?

Your turn

An object travels at an average speed of 10 m/s for 4 seconds. How far did it travel?

40 m

Worked example

An object travels a distance of 20 metres at an average speed of 5 m/s .
How long was the journey?

Your turn

An object travels a distance of 40 metres at an average speed of 5 m/s .
How long was the journey?

10 seconds

Worked example

An object travels a distance of 30 kilometres in 2 hours.
Calculate its average speed

Your turn

An object travels a distance of 60 kilometres in 2 hours.
Calculate its average speed.

7.5 km/h

Worked example

An object travels a distance of 20 kilometres at an average speed of 5 km/h . How long was the journey?

Your turn

An object travels a distance of 60 kilometres at an average speed of 5 km/h .
How long was the journey?

12 hours

Worked example

An object applies a force of 900 Newtons on an area of 60 cm^2 .
Calculate the pressure exerted.

Your turn

An object applies a force of 300 Newtons on an area of 20 cm^2 .
Calculate the pressure exerted.

$$15 \text{ N/cm}^2$$

Worked example

An object exerts a pressure of 15 N/cm^2 on an area of 60 cm^2 .
Calculate the force applied.

Your turn

An object exerts a pressure of 15 N/cm^2 on an area of 20 cm^2 .
Calculate the force applied.

300 N

Worked example

An object exerts a pressure of 15 N/cm^2 on an area.
The force applied is 900 N .
Calculate the area in contact with the object.

Your turn

An object exerts a pressure of 15 N/cm^2 on an area.
The force applied is 300 N .
Calculate the area in contact with the object.

20 cm^2

Worked example

An object has a mass of 900 g .
Its volume is 60 cm^3 .
Calculate its density.

Your turn

An object has a mass of 300 g .
Its volume is 20 cm^3 .
Calculate its density.

$$15 \text{ g/cm}^3$$

Worked example

An object has a density of 15 g/cm^3 .
Its volume is 60 cm^3 .
Calculate its mass.

Your turn

An object has a density of 15 g/cm^3 .
Its volume is 20 cm^3 .
Calculate its mass.

300 g

Worked example

An object has a density of 15 g/cm^3 .
Its mass is 900 g .
Calculate its volume.

Your turn

An object has a density of 15 g/cm^3 .
Its mass is 300 g .
Calculate its volume.

20 cm^3

Worked example

An metal alloy is made from:
100 *g* of metal A
150 *g* of metal B.
Metal A has density 21.9 *g/cm*³
Metal B has density 37.5 *g/cm*³
Work out the density of the alloy.

Your turn

An metal alloy is made from:
200 *g* of metal A
150 *g* of metal B.
Metal A has density 10.9 *g/cm*³
Metal B has density 75 *g/cm*³
Work out the density of the alloy.

17.2 *g/cm*³

Worked example

A drink is made from:

100 *g* of liquid A

150 *g* of liquid B.

Liquid A has density 1.05 g/cm^3

Liquid B has density 0.8 g/cm^3

Work out the density of the drink.

Your turn

A drink is made from:

200 *g* of liquid A

150 *g* of liquid B.

Liquid A has density 2.1 g/cm^3

Liquid B has density 0.4 g/cm^3

Work out the density of the drink.

0.74 g/cm^3 (2 dp)

Worked example

A drink is made from:

100 cm^3 of liquid A

150 cm^3 of liquid B.

Liquid A has density 1.05 g/cm^3

Liquid B has density 0.8 g/cm^3

Work out the density of the drink.

Your turn

A drink is made from:

200 cm^3 of liquid A

150 cm^3 of liquid B.

Liquid A has density 2.1 g/cm^3

Liquid B has density 0.4 g/cm^3

Work out the density of the drink.

1.37 g/cm^3 (2 dp)

Worked example

The densities of two liquids A and B are in the ratio 3: 4

The mass of 1cm^3 of liquid A is 0.9g .

5cm^3 of liquid A is mixed with 10cm^3 of liquid B to make 15cm^3 of liquid C .

Work out the density of liquid C

Your turn

The densities of two liquids A and B are in the ratio 3: 5

The mass of 1cm^3 of liquid A is 1.8g .

5cm^3 of liquid A is mixed with 10cm^3 of liquid B to make 15cm^3 of liquid C .

Work out the density of liquid C

2.6 g/cm^3

Worked example

The force exerted by an object on a surface is $50N$. The surface area in contact with the object is $10cm^2$. What is the pressure exerted by the object?

The pressure exerted on a surface by an object is $50N/cm^2$. The surface area in contact with the object is $10cm^2$. What is the force exerted?

The pressure exerted on a surface by an object is $50N/cm^2$. The force exerted on the surface is $10N$. What is the surface area in contact with the object?

Your turn

The force exerted by an object on a surface is $100N$. The surface area in contact with the object is $25cm^2$. What is the pressure exerted by the object?

$$4 \text{ N/cm}^2$$

The pressure exerted on a surface by an object is $100N/cm^2$. The surface area in contact with the object is $25cm^2$. What is the force exerted?

$$2500 \text{ N}$$

The pressure exerted on a surface by an object is $100N/cm^2$. The force exerted on the surface is $25N$. What is the surface area in contact with the object?

$$0.25 \text{ cm}^2$$

Worked example

The mass of an object is 50 g . The volume is 10 cm^3 . What is the density of the object?

The density of an object is 10 g/cm^3 . The volume is 5 cm^3 . What is the mass?

The density of an object is 10 g/cm^3 . The mass is 50 g . What is the volume?

Your turn

The mass of an object is 100 g . The volume is 25 cm^3 . What is the density of the object?

$$4 \text{ g/cm}^3$$

The density of an object is 10 g/cm^3 . The volume is 25 cm^3 . What is the mass?

$$2500 \text{ g}$$

The density of an object is 10 g/cm^3 . The mass is 25 g . What is the volume?

$$0.4 \text{ cm}^3$$

Worked example

A car travels 50 miles in 2 hours. What speed does it travel at?

A car travels at 50mph (miles per hour) for 2 hours. How far does it travel?

A car travels 50 miles at 25mph (miles per hour). How long does it take?

Your turn

A car travels 60 miles in 2 hours. What speed does it travel at?

30 miles per hour

A car travels at 60mph (miles per hour) for 2 hours. How far does it travel?

120 miles

A car travels 30 miles at 60mph (miles per hour). How long does it take?

0.5 hours (30 minutes)

Worked example

The distance from A to B is 5 miles.
The distance from B to C is 9 miles.
Person X drives from A to B then B to C .
 X leaves A at 10:00
 X drives from A to B at an average speed of 40 miles per hour.
 X wants to get to C at 10:35.
Work out the average speed X must drive from B to C

Your turn

The distance from A to B is 10 miles.
The distance from B to C is 18 miles.
Person X drives from A to B then B to C .
 X leaves A at 10:00
 X drives from A to B at an average speed of 40 miles per hour.
 X wants to get to C at 10:35.
Work out the average speed X must drive from B to C

54 miles per hour

Worked example

Person X made a journey on Monday.
 X made the same journey on Tuesday.
 X 's average speed on Tuesday was 50% greater than X 's average speed on Monday.

Calculate the percentage reduction in the time the journey took on Tuesday compared with Monday.

Your turn

Person X made a journey on Monday.
 X made the same journey on Tuesday.
 X 's average speed on Tuesday was 25% greater than X 's average speed on Monday.

Calculate the percentage reduction in the time the journey took on Tuesday compared with Monday.

20%