

GCSE Maths – Geometry and Measures

Units of Measure

Worksheet

NOTES



SOLUTIONS



This worksheet will show you how to work out different types of units of measures questions. Each section contains a **worked example**, a **question with hints** and then **questions for you to work through** on your own.

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Section A

Worked Example

Umar runs 5,200 metres every day. Work out how far Umar runs in 5 days in kilometres.

Step 1: Find the conversion for metres to kilometres.

$$m \rightarrow \div 1000 \rightarrow km$$

Step 2: Calculate the value in kilometres.

$$5200 \div 1000 = 5.2$$

Umar runs 5.2 km a day

Step 3: Calculate the distance ran in 5 days.

$$5.2 \times 5 = 26$$

Umar runs 26 km in 5 days.

Guided Example

Shriya is 5 feet and 3 inches tall. Ayushi is 169 cm tall. Shriya says “I am the taller one”. Is she correct?

Step 1: Convert all values to 1 unit.

Change all values to cm

Step 2: Use ratios to convert 5 feet to the chosen common unit.

$$1 \text{ foot} = 30 \text{ cm}$$

$$5 \text{ ft} = \underline{\hspace{2cm}} \text{ cm}$$

Step 4: Use ratios to convert 3 inches to the chosen common unit.

$$1 \text{ inch} = 2.5 \text{ cm}$$

$$3 \text{ inches} = \underline{\hspace{2cm}} \text{ cm}$$

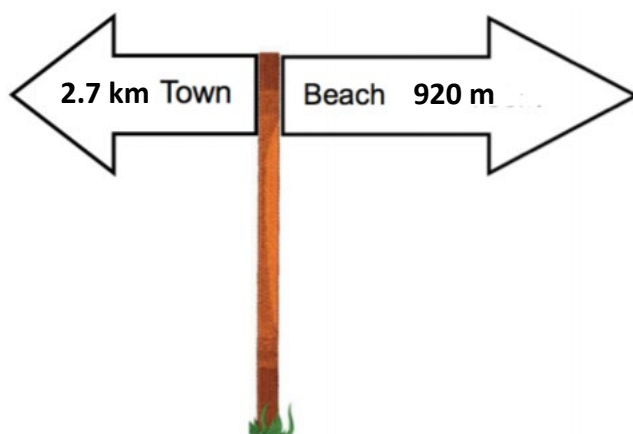
Step 5: Add these heights together to calculate Shriya’s height in centimetres. Compare Shriya’s and Ayushi’s heights.



Now it's your turn!

If you get stuck, look back at the worked and guided examples.

1. Convert 0.02 kilometres to centimetres
2. Convert 45 feet to yards ($3 \text{ feet} = 1 \text{ yard}$)
3. Ross travels 36 km from Birmingham to Coventry. He then drives 120 miles to London. Calculate the total distance Ross travels in miles. ($5 \text{ miles} = 8 \text{ km}$)
4. Rachel and Phoebe go running. Rachel runs 1km to Phoebe's house and together they run 5 miles. Rachel then runs back home. How many kilometres does Rachel run? ($5 \text{ miles} = 8 \text{ km}$)
5. Monica sees this sign. What is the distance between the Town and the Beach?



Section B

Worked Example

Convert 760 mm^2 to cm^2

Step 1: Convert mm^2 to cm^2 .

$$\text{mm}^2 \rightarrow \div 100 \rightarrow \text{cm}^2$$

Step 2: Calculate the required value.

$$760 \div 100 = 7.6$$

$$760 \text{ mm}^2 = 7.6 \text{ cm}^2$$

Guided Example

Convert 21 cm^3 to mm^3

Step 1: Convert cm^3 to mm^3 .

Step 2: Calculate the required value.



Now it's your turn!

If you get stuck, look back at the worked and guided examples.

6. Convert 3232 cm^2 to m^2

7. Convert 9245 mm^3 to cm^3

8. Convert 0.003 m^2 to mm^2

9. A triangle's area is 12000 cm^2 . What is the area in m^2 ?

10. The volume of a box is 3000000 cm^3 . What is the volume in m^3 ?



Section C

Worked Example

Charles pours lemonade out of a 1 litre jug. His cup holds 300 ml and he fills his cup exactly halfway. How much lemonade is left in the jug in ml?

Step 1: Convert the capacity of lemonade into millilitres.

$$\text{litres} \rightarrow \times 1000 \rightarrow \text{ml}$$

There is 1000 ml of lemonade in the 1 litre jug.

Step 2: Calculate how much lemonade is poured into Charles' glass.

$$300 \div 2 = 150$$

Charles pours 150 ml out of the jug

Step 3: Calculate the remaining capacity.

$$1000 - 150 = 850$$

There is 850 ml of lemonade left in the jug.

Guided Example

Amy donates 30 pints of milk to Food Aid. Jake donates 3 gallons of milk. Who donates more milk?

Step 1: Convert all values to a chosen common unit.

Change all values to pints

Step 2: Use ratios to convert 3 gallons to pints.

$$8 \text{ pints} = 1 \text{ gallon}$$

$$\text{--- pints} = \text{--- gallons}$$

Step 3: Work out who donates more milk.



Now it's your turn!

If you get stuck, look back at the worked and guided examples.

11. Convert 4000 ml to cm^3

12. Convert 9 litres to gallons

13. Rosa is having a party. She mixes 4 litres of Apple Juice with 1800 ml of Mango Juice and 500 ml of Orange Juice. What is the total capacity of her drink?

14. Terry is mixing paint to make a specific colour of teal. He mixed 1 gallon of dark blue with 1.9 litres of Green Paint and 1140 ml of White Paint. He needs 7.5 litres of paint to cover his walls. Will Terry have enough paint?

15. Kevin and Ray are at a farm, milking cows. Kevin milks 6.75 litres and Ray milks 11 pints. Who milks more?



Section D

Worked Example

Gina receives an order weighing 1.9 kg. Another parcel arrives weighing 980 grams. What is the total mass of Gina's packages?

Step 1: Convert mass from kilograms to grams.

$$kg \rightarrow \times 1000 \rightarrow g$$

The first order has a mass of 1900 g.

Step 2: Calculate the total mass of Gina's packages.

$$1900 + 980 = 2880 \text{ g}$$

The total mass of the packages is 2880 grams.

Guided Example

Doug is going on holiday and is travelling with 2 suitcases. The first suitcase weighs 9.5 kg, and the second suitcase weighs 3500 g. There is a 15 kg total limit, does Doug exceed the limit?

Step 1: Convert mass from grams to kilograms.

The second suitcase has a mass of _____ kg.

Step 2: Calculate the total mass of Doug's luggage.

Step 3: Evaluate whether the luggage exceeds the limit.



Now it's your turn!

If you get stuck, look back at the worked and guided examples.

16. Convert 45 ounces to grams ($28\text{ g} = 1\text{ ounce}$)

17. Convert 3 stones to grams ($6.4\text{ kg} = 1\text{ stone}$)

18. Scully weighs 19.5 stones. Hitchcock weighs 120 kg. Who weighs more and by how much? ($6.4\text{ kg} = 1\text{ stone}$)

19. Madeleine buys some vegetables. She buys 1.5 kg of potatoes, 400g of tomatoes, 2390 grams of onions and butternut squash weighing 1.1 kg. She carries them with 2 bags. Each bag can hold a mass of up to 2500 grams. Will Madeleine be able to carry the vegetables with 2 bags?



20. A lift can hold up to 650 kg. There are 8 people in this lift and each person weighs 10 stones on average. Will the lift be able to carry the weight of all 8 people? ($6.4 \text{ kg} = 1 \text{ stone}$)

21. Cagney weighed 6.4 pounds when she was born. Lacey 100 ounces when she was born. Who weighed more at birth? ($16 \text{ ounces} = 1 \text{ pound}$)



Section E

Worked Example

Convert 100 hours into days.

Step 1: State the conversion from hours into days.

$$\text{Hours} \rightarrow \div 24 \rightarrow \text{Days}$$

Step 2: Calculate how many days 100 hours is in days.

$$100 \div 24 = 4.167 \text{ days}$$

So,

$$100 \text{ hours} = 4.2 \text{ days}$$

Guided Example

Sophia does her Maths, Geography, and Economics homework. It takes her a total of three hours. She spends 70 minutes on her Economics homework and 80 minutes on her Geography Homework. How many minutes does Sophia spend doing her Maths homework?

Step 1: Convert from hours to minutes.

Step 2: Calculate how much time she has spent doing her Geography and Economics homework.

Step 3: Calculate the time she spends doing her maths homework.



Now it's your turn!

If you get stuck, look back at the worked and guided examples.

22. Convert 2,160,000 seconds to hours.

23. Convert a fortnight to hours.

24. Ava is travelling on a train to Brooklyn. She leaves at 11:05. Her journey takes 1 hour and 57 minutes. What time is her train due to arrive in Brooklyn?

25. David is completing a puzzle. He takes 5 min and 45 seconds to complete it. Debby also completes a puzzle but takes 200 seconds longer. How long does Debby take to complete the puzzle?

26. Nikolaj is watching a movie starting at 10:30 and ending at 3:05pm. How long is the movie?



Section F

Worked Example

Jason goes to a shop and buys:

chocolate - 99p
sweets - £1.29
biscuits - 89p
crisps - £2.25

What is the total cost of his shop in pounds?

Step 1: Convert all the prices to 1 unit (pounds).

$$99p = £0.99$$

$$89p = £0.89$$

Step 2: Once they are in the same unit, add up all the prices.

$$£0.89 + £0.99 + £1.29 + £2.25 = £5.42$$

Jason's total shop cost £5.42.

Guided Example

Melanie is going on holiday to New York. She has £200 that needs to be converted to dollars before she goes. How many dollars will she receive if £1 = \$1.40?

Step 1: Use ratios to convert £200 to dollars.



Now it's your turn!

If you get stuck, look back at the worked and guided examples.

27. Sharon goes to London. Her travel expenses cost £77.50, her food expenses cost 816p. She also bought some gifts for her family. In total she spent £100, how much did she spend on gifts?
28. Marcus bought 2 pens at 64p each, 3 binders at £1.09 each and 1 rubber at £1.19. He pays with a £10 note. Work out how much change Marcus should get from £10.
29. Mac went to Spain. He changed £450 into euros (€). The exchange rate was £1 = €1.62. How many euros does he get from £450?
30. A pencil costs 85p. Work out how many pencils can be bought with a £5 note.
31. Keith is going on holiday to Japan. He wants to change £150 into yen. The exchange rate is £1 = ¥168. How many Yen will Keith receive?

