LESSON MAKER PRO

Units That Work

Choose matching units before using a formula.

HIGH SCHOOL · GDA.NQ.B.2.a

GDA.NQ.B.2.a "Choose and interpret units consistently in formulas."

NAME _____ DATE _____

MATCH, THEN CALCULATE

Write units beside the numbers you put into a formula. If a rate is measured per hour, convert the time to hours before multiplying. Check that the units in your calculation leave the unit the question asks for.

WORKED EXAMPLE

A practice room costs $11 per hour. What is the cost for 120 minutes? Use C=rt, where r is the hourly rate and t is time in hours.

1. Convert the time: 120 minutes / 60 minutes per hour = 2 hours.
2. Substitute matching units: C=($11/hour)(2 hours).
3. The hours cancel, so C=$22.

Answer: $22

PRACTICE 6 problems

1 Use d=vt. A runner moves at 5 m/s for 13 s. What distance does the runner travel?

ANSWER _____

2 Use C=rm. Nuts cost $16/kg, and you buy 750 g. What is the cost?

ANSWER _____

3 Use density = mass/volume. A liquid has a mass of 36 g and a volume of 0.024 L. What is its density in g/mL?

ANSWER _____

4 Use A=lw. A rectangular poster is 150 cm long and 0.8 m wide. What is its area in m^2?

ANSWER _____

5 Use E=Pt. A device uses power at 0.5 kW for 30 minutes. How much energy does it use in kWh?

ANSWER _____

6 Use v=d/t. A cyclist travels 2.4 km in 400 s. What is the cyclist's average speed in m/s?

ANSWER _____

APPLY IT Show your work

1 Your phone uses 0.48 GB of data per hour of video. You watch for 75 minutes. Using D=rt, how many GB of data do you use?

WORK SPACE

ANSWER _____

2 You download a 1.8 GB game file at a steady rate of 25 MB/s. Use t=S/r and 1 GB=1000 MB. How many seconds does the download take?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A mural is 2.5 m long and 180 cm tall. One coat uses 0.3 L of paint per m^2. Paint comes in 750 mL cans. Use A=lw and P=rA to find how many whole cans are needed for one coat. Show how the units guide your calculations.

WORK SPACE AND ANSWER

ANSWER KEY # Units That Work

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use d=vt. A runner moves at 5 m/s for 13 s. What distance does the runner travel?	**65 m**
2	Use C=rm. Nuts cost $16/kg, and you buy 750 g. What is the cost?	**$12**
3	Use density = mass/volume. A liquid has a mass of 36 g and a volume of 0.024 L. What is its density in g/mL?	**1.5 g/mL**
4	Use A=lw. A rectangular poster is 150 cm long and 0.8 m wide. What is its area in m^2?	**1.2 m^2**
5	Use E=Pt. A device uses power at 0.5 kW for 30 minutes. How much energy does it use in kWh?	**0.25 kWh**
6	Use v=d/t. A cyclist travels 2.4 km in 400 s. What is the cyclist's average speed in m/s?	**6 m/s**

PART 2 · APPLY IT

1. **0.6 GB** Convert 75 minutes to 1.25 hours. Then (0.48 GB/hour)(1.25 hours)=0.6 GB.
2. **72 seconds** Convert 1.8 GB to 1800 MB. Then 1800 MB / (25 MB/s)=72 seconds.

CHALLENGE

2 cans. Convert 180 cm to 1.8 m, so A=(2.5 m)(1.8 m)=4.5 m^2. Then P=(0.3 L/m^2)(4.5 m^2)=1.35 L=1350 mL. Since 1350/750=1.8, the mural needs 2 whole cans.

Accept equivalent decimal or fraction forms when the requested unit is correct. For the challenge, require rounding up to whole cans.