How much do we pay in property taxes for our house or boat?

Business Mathematics
Class notes
Property Tax (section 13.1)

Property tax is figured as a percentage of the assessed value of the object. The **assessed value** of a house, boat, or other taxable object is found by multiplying the fair market value by some percentage. The **fair market value** is the price a property would sell for.

expl 1: Find the assessed value of the property.
Fair market value: $98,200
Rate of assessment: 42%

Find 42% of $98,200.

42% of 98,200

= 0.42 * 98200

= $41,244

expl 2: One Harley Davidson store has property with a fair market value of $518,600. The property is located in an area that is assessed at 35% of market value. The tax rate is $7.35 per $100 (of assessed value). Find the property tax.

First, what is the assessed value?

assessed value

= 0.35 * 518,600

= $181,510

What does "$7.35 per $100 (of assessed value)" mean?

$$\text{prop tax} = \frac{181,510}{100} * 7.35$$

$\approx$ $13,340.99

Converting among Tax Formats:

As we will see, property tax is often given in different formats. We might be given a percentage, an amount of dollars per $100 of assessed value, an amount of dollars per $1,000 of assessed value, or even mills (per $1 of assessed value). We will need to convert among forms and figure property taxes with them.

What the heck is a mill?

First, a **mill** is one-thousandth of a dollar. So 8 mills would be 8 of these $0.001 – or rather $0.008. That is 8 tenths of a cent! Let's play around with converting among the different formats you might see.

expl 3: Consider a tax of $8 per $100 of assessed value. Use percents and ratios to write their equivalent forms below.

$8 per $100 of assessed value = 8 %

8 per 100 is 8/100 ⟹ 0.08 = 8%.

×10

$8 per $100 of assessed value = $ 80 *per $1,000* of assessed value

×10

Make a proportion.

$$\frac{8}{100} = \frac{?}{1{,}000}$$

expl 4a: Consider a tax of 80 mills (per $1 of assessed value). So for every dollar of assessed value, how much tax is charged?

They will usually just say 80 mills.

80 mills = $0.080 = 8¢

80 one-thousandths of a dollar.

So how much is 80 thousandths of a dollar?

$$\frac{80}{1000} = \frac{8}{100}$$

expl 4b: So for every $1,000 of assessed value, how much tax is charged?

0.08 * 1000 = $80

divide

expl 5: Write the given tax rate using the other three methods.

Tax rate: $6.75 per $100

They leave off "of assessed value" often.

a.) Write it as a percent.

$\frac{6.75}{100} = 6.75\%$

Do we use the percent sign, dollar sign, or no sign (for mills)?

b.) Write the equivalent tax rate "67.5 per $1,000".

$6.75 per $100 → ×10 → $67.5 per $1000

2 ×10

$\frac{67.5}{1000}$

c.) Write the equivalent tax rate "67.5 mills".

"one-thousandths of a dollar"

Recall, $80 per $1,000 was the same as 80 mills.

$1 \text{ mill} = \frac{\$1}{1000} = 0.001$

Worksheet: Finding property tax amounts with various rates:

This worksheet will help you practice finding the property tax for a house with an assessed value of $100,000. You will use various formats.

Determining the Property Tax Rate:

How does a city (or taxing authority) figure how much to charge their citizens for property tax? Here is a simple process they might go through.

Step 1: Estimate the amount of money needed by the city or taxing authority.
Step 2: Find the *total* fair market value of *all* properties in the area.
Step 3: Find the *total* assessed value of *all* the properties.

Step 4: Calculate $\text{Property tax rate} = \dfrac{\text{Total tax amount needed}}{\text{Total assessed value of properties}}$

This will be a percent in decimal form.

expl 6: Find the tax rate. Write it as a percent, rounded to the nearest hundredth of a percent.
Total tax amount needed: $28,630,000
Total assessed value: $12,350,000,000

What do you round to when you need to end up with the nearest hundredth of a percent?

prop tax rate = $\dfrac{28630,000}{12,350,000,000}$

≈ 0.0023

$= 0.23\% =$ 23 hundredths of a percent

10th 100th

To summarize, complete the sentences.
So, in order for the municipality to make the required $28,630,000, they should charge a property tax rate of 0.23%. At this rate, the total assessed value of $12,350,000,000 will generate $28,405,000 in taxes.

0.23% of total ass. value = .0023 * 12,350,000,000

Why are we short?

rounding errors.