

Study the following.

convert (kuhn-**vurt**) – the change from one thing to another. When you are talking about measurement, you are changing from one unit of measure to another unit of measure. (I want to convert from minutes to seconds.)

conversion (kuhn-**vur**-shuhn) – a change from one thing to another. (I had no trouble with the conversion of days to weeks.)

Say each word out loud and write it in the blank.

convert _____

conversion _____

Write each definition in your own words.

convert

conversion

Write two sentences using each word.

convert

1.

2.

conversion

1.

2.

Study the following. Review of time units of measure.

60 seconds = 1 minute

60 minutes = 1 hour

24 hours = 1 day

7 days = 1 week

52 weeks = 1 year

365 days = 1 year

Make flash cards to study these if you don't know them.

Study the flash cards every day for at least a week.

Study the following.

When converting, you are changing the units of measure, not the actual amount of what you have.

Example:

| |
|--------------|
| 1 centimeter |
|--------------|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10mm |
|---|---|---|---|---|---|---|---|---|------|

1 centimeter = 10 millimeters

The same amount, with different units of measure.

Example:

| |
|-------|
| 1 day |
|-------|

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

1 day = 24 hours

Same length, with different units of measure.

Draw an example of 1 centimeter = 10 millimeters.

Draw an example of 1 week = 7 days.

Study the following.

There are two parts to converting a unit of measure to another unit of measure.

Part 1 is figuring out the relationship between the original unit of measure and the new one.

Example: convert 14 days, to weeks.

Ask yourself what the relationship is between the two units of measure. Days is the original unit of measure, and weeks is the new one.

The relationship between days and weeks is:

There are 7 days in 1 week.

Answer these questions related to Part 1.

1. What is the relationship between hours and days?

2. What is the relationship between days and years? _____

3. What is the relationship between hours and minutes? _____

4. What is the relationship between seconds and minutes? _____

5. To convert 48 hours to days, what relationship do you need to know?

6. To convert 240 minutes to hours, what relationship do you need to know?

7. To convert 4 years to weeks, what relationship do you need to know?

Study the following.

Part 2 is figuring out whether to multiply or divide.

If your original unit of measure is a larger size (like weeks), and you are changing it to a smaller unit of measure (like days), the number of units will be larger, so you multiply the original number by the relationship number.

If your original unit of measure is a smaller size (like days), and you are changing it to a larger unit of measure (like weeks), the number of units will be smaller, so you divide the original number by the relationship number.

Example: Convert 2 weeks, to days.

Part 1: the relationship is 1 week = 7 days

Part 2: Weeks are larger than days, so the number of units will be larger, so you multiply.

Example: Convert 14 days, to weeks.

Part 1: the relationship is 1 week = 7 days

Part 2: Days are smaller than weeks, so the number of units will be smaller, so you divide.

Fill in the blanks.

1. What is part 1 for converting units? _____

2. What is part 2 for converting units? If your original unit of measure is a _____ size, and you are changing it to a _____ unit of measure, the number of units will be _____ so you _____ the original number by the relationship number.

3. If your original unit of measure is a _____ size, and you are changing it to a _____ unit of measure, the number of units will be _____ so you _____ the original number by the relationship number.

Answer these questions related to Part 2.

1. If my original unit of measure is seconds, and I want to convert to minutes, do I multiply or divide? _____
2. If my original unit of measure is years, and I want to convert to days, do I multiply or divide? _____
3. If my original unit of measure is hours, and I want to convert to minutes, do I multiply or divide? _____
4. If my original unit of measure is weeks, and I want to convert to years, do I multiply or divide? _____

Convert the following using multiplication.

1. 3 minutes = _____ seconds
2. 4 hours = _____ minutes
3. 2 days = _____ hours
4. 5 weeks = _____ days
5. 2 years = _____ weeks
6. 2 years = _____ days

Convert the following using division.

1. 120 seconds = _____ minutes
2. 180 minutes = _____ hours
3. 48 hours = _____ days
4. 28 days = _____ weeks
5. 104 weeks = _____ years
6. 730 days = _____ years

Convert the following.

1. 3 meters = _____ centimeters
2. 20 millimeters = _____ centimeters
3. 10 kilograms = _____ grams
4. 400 milliliters = _____ liters
5. 20 liters = _____ milliliters
6. 300 centimeters = _____ meters

Study the following.

Drawings can also help you figure out whether to multiply or divide.

Example: Convert 2 weeks, to days.

Part 1: the relationship between weeks and days is there are 7 days in one week.

| |
|--------|
| 1 week |
|--------|

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|

days

Part 2:

2 weeks can be shown as follows.

| | |
|--------|---------|
| 1 week | 2 weeks |
|--------|---------|

Replacing each week with 7 days gives the following.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

You can see you need to multiply, to get the answer.

2 weeks times 7 = 14 days.

Solve the following using drawings.

1. Convert 2 centimeters, to millimeters.

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2. Convert 3 centimeters to millimeters.

3. Convert 3 weeks, to days.

Study the following.

Here is an example of a drawing showing division.

Example: Convert 14 days, to weeks.

Part 1: the relationship between weeks and days is there are 7 days in one week.

| |
|--------|
| 1 week |
|--------|

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|

days

Part 2:

14 days can be shown as follows

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|

Replacing each group of 7 days, with one week gives the following.

| | |
|--------|---------|
| 1 week | 2 weeks |
|--------|---------|

You can see you need to divide, to get the answer.

14 days divided by 7 = 2 weeks.

Solve the following using drawings.

1. Convert 20 millimeters to centimeters.

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2. Convert 30 millimeters to centimeters.

3. Convert 21 days, to weeks.

Study the following.

Sometimes exact drawing are too difficult because the numbers are too large.

You can do rough sketches as shown below.

Example: Convert 3 minutes, to seconds.

Part 1: The relationship between minutes and seconds is, there are 60 seconds in one minute.

| |
|----------|
| 1 minute |
|----------|

| |
|----------------------|
| 1,2,3.....60 seconds |
|----------------------|

Part 2:

3 minutes can be shown as the following.

| | | |
|----------|-----------|-----------|
| 1 minute | 2 minutes | 3 minutes |
|----------|-----------|-----------|

Replacing each minute with 30 seconds gives the following.

| | | |
|---------------------|---------------------|---------------------|
| 1,2,3,...30 seconds | 1,2,3,...30 seconds | 1,2,3,...30 seconds |
|---------------------|---------------------|---------------------|

You can see you need to multiply, to get the answer.

3 minutes times 30 = 90 seconds.

Solve the following using drawings.

1. 21 days = _____ weeks

2. 120 seconds = _____ minutes

3. 4 minutes = _____ seconds

4. 104 weeks = _____ years

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5. 2 years = _____ days

6. 240 minutes = _____ hours

7. 48 hours = _____ days

Convert the following using multiplication.

1. 3 centimeters = _____ millimeters
2. 5 centimeters = _____ millimeters
3. 3 meters = _____ centimeters
4. 5 meters = _____ centimeters
5. 8 meters = _____ centimeters
6. 2 kilometers = _____ meters
7. 3 kilometers = _____ meters
8. 5 kilometers = _____ meters
9. 2 grams = _____ milligrams
10. 3 grams = _____ milligrams
11. 4 grams = _____ milligrams
12. 5 kilograms = _____ grams
13. 6 kilograms = _____ grams
14. 8 liters = _____ milliliters
15. 3 liters = _____ milliliters
16. 6 liters = _____ milliliters
17. 2 kiloliters = _____ liters
18. 3 kiloliters = _____ liters
19. 5 kiloliters = _____ liters

Convert the following using division.

1. 30 millimeters = _____ centimeters
2. 50 millimeters = _____ centimeters
3. 200 centimeters = _____ meters
4. 300 centimeters = _____ meters
5. 500 centimeters = _____ meters
6. 2000 meters = _____ kilometers
7. 6000 meters = _____ kilometers
8. 3000 milligrams = _____ grams
9. 4000 milligrams = _____ grams
10. 8000 milligrams = _____ grams
11. 2000 grams = _____ kilogram
12. 6000 grams = _____ kilogram
13. 2000 milliliters = _____ liters
14. 3000 milliliters = _____ liters
15. 3000 liters = _____ kiloliters
16. 10,000 liters = _____ kiloliters

Convert the following using multiplication or division.

1. 6 centimeters = _____ millimeters
2. 500 centimeters = _____ meters
3. 2000 grams = _____ kilograms
4. 7 liters = _____ milliliters
5. 2 kilometers = _____ meters
6. 40 millimeters = _____ centimeters
7. 4 kiloliters = _____ liters
8. 7000 liters = _____ kiloliters
9. 2000 meters = _____ kilometers
10. 4 centimeters = _____ millimeters
11. 5 kilograms = _____ grams
12. 4000 meters = _____ kilometers
13. 5000 grams = _____ kilograms
14. 6000 liters = _____ kiloliters
15. 2 liters = _____ milliliters
16. 2 meters = _____ centimeters
17. 12 grams = _____ milligrams
18. 400 centimeters = _____ meters