



Adding Coins

Many transactions in real life involve the handling of money. In Australia, we have six different coins—5-cent, 10-cent, 20-cent, 50-cent, 1-dollar and 2-dollar coins. 100 cents is equal to 1 dollar.



Determine the total value of each combination of coins below without using a calculator. Write the value on the line.

- 1 20-cent coin, 3 5-cent coins, 2 10-cent coins _____
- 1 1-dollar coin, 2 10-cent coins, 2 20-cent coins _____
- 5 20-cent coins, 5 10-cent coins, 3 5-cent coins _____
- 1 2-dollar coin, 1 5-cent coin, 1 50-cent coin _____
- 4 5-cent coins, 12 10-cent coins, 1 1-dollar coin _____
- 2 50-cent coins, 2 2-dollar coins, 3 20-cent coins _____

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Comparing Coins

Coins can be combined in many different ways. A large stack of coins may or may not have more value than a small stack of coins. For example, 15 5-cent coins (75 cents) has less value than a much smaller stack of 4 20-cent coins (80 cents). Sometimes a larger stack of coins does have a greater value than a small stack. For example, 19 5-cent coins (95 cents) is worth more than 7 10-cent coins (70 cents).

Determine which combination of coins below represents the greatest amount of money without using a calculator.

- 12 5-cent coins, 1 1-dollar coin, 1 20-cent coin
- 1 50-cent coin, 4 10-cent coins, 1 2-dollar coin
- 1 1-dollar coin, 3 10-cent coins, 9 5-cent coins
- 2 50-cent coins, 10 5-cent coins, 1 2-dollar coin
- 3 50-cent coins
- 5 10-cent coins, 4 20-cent coins, 3 5-cent coins



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Pay Deductions



Your pay has a number of deductions to pay for things such as taxes and superannuation. Net pay, or take-home pay, is pay after taxes and other amounts have been taken out.

Determine how much each person below will get to take home after his or her deductions are made.

1. Malcolm makes \$598.50 each week. He pays 11.5% in income tax, 5.3% in voluntary union fees and 7.65% for superannuation. What is his net pay?
2. Kendra makes \$695.70 each week. She pays 14% in income tax, 11% into superannuation and 1.8% in union fees. What is her take-home pay?
3. Jack makes \$1370.00 each week. He pays 14.2% in income tax and has \$150 taken each week to pay for a legal settlement. What is his net pay?
4. Lila makes \$322.60 each week. She pays 13.5% in income tax, 3.5% in union fees and \$50 for superannuation. What is her take-home pay?

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Pay Rates



Entry-level jobs do not pay extremely well. As people get more experience and education, they often find that higher-paying jobs are open to them. Some people get paid an hourly rate, while others are paid a salary that is a flat fee, usually for a year of work at a time. If you get an hourly rate, you can find out how much you are getting at the end of a pay period by multiplying the number of hours you've worked by the hourly pay rate you receive.

Solve the following pay rate problems.

1. How much will you get paid if you work 28.5 hours for \$7.75 per hour?
2. Your salary is \$65,788. If you work fifty 40-hour weeks in a year, what is your hourly wage?
3. You work 4 hours on Monday, 4.5 hours on Tuesday, 7.25 hours on Thursday and 12 hours on Saturday. If you get paid \$11.52 per hour, what is your total pay for the week?

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Target Heart Rate



Your target heart rate is the rate that your heart should be beating while you are engaged in vigorous exercise. This allows your lungs and your heart to get the maximum benefit from your workout. Below are the formulas for calculating the target heart rate for both males and females at 85% of maximum heart rate. The formula is different for males and females because, in general, a woman's heart beats a little faster than a man's.

$$\text{Target heart rate (male)} = 0.85(220 - \text{age})$$

$$\text{Target heart rate (female)} = 0.85(226 - \text{age})$$

Complete the following.

1. Find your own target heart rate.
2. Find the target heart rate of someone of the opposite gender.
3. What is the target heart rate for a 65-year-old man? A 65-year-old woman?
4. What is the target heart rate for a 25-year-old man? A 25-year-old woman?

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Body Mass Index

The body mass index (BMI) is a way of comparing your height (measured in metres) and your weight (measured in kilograms). Having a high BMI can be very unhealthy. You can find your BMI by using the formula and chart below.



$$\text{BMI} = \frac{(\text{weight in kilograms})}{(\text{height in metres})^2}$$

BMI	Weight category
below 18.5	underweight
18.5 – 24.9	normal
25.0 – 29.9	overweight
30.0 and above	obese

Calculate the BMI for each person below.

1. a person who is 195 centimetres tall and weighs 110 kilograms
2. a person who is 165 centimetres tall and weighs 60 kilograms
3. a person who is 157 centimetres tall and weighs 50 kilograms
4. a person who is 182 centimetres tall and weighs 200 kilograms

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Volume of a Cylinder



A cylinder is an object with two sides that are parallel and with congruent surfaces that are both circles. The volume of a cylinder can be found by multiplying the height of the cylinder by the area of the circle on the top or bottom of the cylinder.

The formula for the volume of a cylinder is $V = \pi r^2 h$, where V is the volume, r is the radius of the circle on the top or bottom of the cylinder, and h is the height of the cylinder.

Solve each problem below.

1. You measure a 1-litre paint can and find that its interior measurements are diameter 16 centimetres and height 48.3 centimetres. How many cubic centimetres are in a litre?
2. Barrels of oil have 158,987 cubic centimetres of oil in them. Based on your answer to number 1, about how many litres are in a barrel of oil?

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Volume of a Pyramid



A pyramid is a three-dimensional shape that has at least three faces that are triangles and only one base. To calculate the volume of a pyramid, you have to calculate the volume of the base. The height of the pyramid is a line that runs from the peak of the pyramid down to the base so that it forms a right angle with the base. The formula for the volume of a pyramid is $V = \frac{1}{3}bh$, where b stands for the area of the base and h stands for the height of the pyramid.

Solve each problem below.

1. You buy a new house and discover that it has an uninsulated attic. The house has a pyramid roof (or hip roof), and the interior dimensions are 12 metres by 12 metres. The ceiling is 2 metres high at its centre. If you want to fill the whole space with insulating foam, how many cubic metres will you need?
2. The Great Pyramid of Giza has a square base that is 215.3 metres on a side. It has a vertical height of 143.9 metres. How many cubic metres are there in the pyramid?

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