Most students dread doing math word problems. How do you know what it’s asking? Most of the math that you’re taught in books or school isn’t related to real life. The point of a word problem is to present math in a real-life situation. So, it's hard to make the connections between the math you learned and the math in a word problem. You need a strategy to deal with understanding and solving math word problems.

In a way, solving word problems is like playing video games. In a video game the first thing you do is find out where you’re supposed to go and what you’re supposed to do. A good video game gives you clues. There might be markers showing you what person to talk to, an introductory movie telling you about the story, and of course, you never start out far from the first place you’re supposed to be.

No matter how many clues you have, once you start a video game and look around a bit, you need to try something and see what happens. Sometimes it works and sometimes it doesn’t. If it doesn’t work, then you do something different, and you keep trying until it does work. If you have played a video game, you have done these steps, although you may not have thought about it as a problem-solving process.

The same kind of plan works for solving math word problems. First, you have to figure out what the problem is asking you to do. Just like a game, the word problem expects you to behave in a certain way, take a certain path to solve the problem. The word problem's got a goal, and you need to find out what that is.
Next, you have to look for clues, just like you would in a video game. Is there a path that looks like you’re supposed to follow it? Are there hints that seem to point in a direction? While you’re practicing for the GED, you can circle the clues or underline the words in the problems you’re working on, so you will remember to use them later. On the GED math test, you’ll have notepaper to write down important information.

On the next step, it’s easy to get off track, and sometimes you can waste a lot of time. This step is the solving part. If you rush into it without a plan, you can do the wrong operation or not do the operations in the right order, like dividing when you should be multiplying. Think through what the problem is asking and what information you have to make a plan to solve the problem, and then work it through.

The last step in solving word problems is different from a video game, because you don’t really have to check your work in a game. In a game if it doesn’t work, you just try something different. In a math problem, they don’t tell you if you did it right (at least not right away). You do not get points, or get shot at, or lose the race. In a math word problem, take a look at it when you are done to see if it makes sense. Try to solve it in a different way and see if the answer comes out the same. If it doesn’t, then something is definitely wrong. On multiple choice questions, you’ve got an immediate way to check your answers: compare them with the multiple choice answers. On free-form grid answers, make sure your solution will fit into the grid.

For math word problems here are the four steps to use:

1. First, figure out what the question is asking for.
2. Second, look at the clues, the information the problem gives you.

3. Third, put together a plan and then solve it.

4. And fourth, check your work to see if it makes sense.

Let’s try working through a typical math word problem, using this strategy:

You may use a calculator for this question.

Gregor manages a machining shop which makes specialized bolts. One worker can generate 112 bolts per hour and works 8 hours per day. Gregor’s biggest customer needs him to fill an order for 15,000 bolts in the next 5-day work week. How many workers does Gregor have to schedule to fill the order?

Enter your answer on the answer grid:

See "The GED Free-Entry Grids" to learn about answer grids!
o, how do you go about solving this problem? Let’s take it one step at a time:

1. **First, figure out what the question is asking for.** Read through the question and make sure you understand it. There’s a lot of information there. But it boils down to one question: How many workers will it take to make 15,000 bolts in five 8-hour days? Sometimes it helps to rewrite the question in your own words to make sure you understand what it’s asking.

2. **Second, look at the clues, the information the problem gives you.** The problem gives you a lot of information. It can help to make a chart of the information in the problem, or just note it down, so it’s clear and easy to read:

   ![chart](How many workers? Goal: 15,000 bolts 1 worker = 112 bolts per hour 5 days, 8 hours per day)

3. **Third, put together a plan and then solve it.** How do you get from the information to the solution? You’ll need to use reasoning to
work through it. Start with small steps. To know how many workers you need to make 15,000 bolts in five days, it would help to know how many bolts a worker can make in a day. To do that, multiply the number of bolts a worker can make per hour by the number of hours per day, 8. Since you can use a calculator, this is pretty easy:

\[
112 \times 8 = 896 \text{ bolts per day}
\]

Now, since they have five days, how many bolts can one worker make in five days? Multiply the number of bolts per day times 5.

\[
896 \times 5 = 4,480 \text{ bolts per week}
\]

Remember to keep track of what the numbers mean. 4,480 is the number of bolts one worker can make in a week. The question asks how many workers are needed? To find out, divide the total number of bolts needed (15,000) by the number of bolts one worker can make (4,480).

\[
15,000 \div 4,480 = 3.34821428571428571428571428...
\]

4. And fourth, check your work to see if it makes sense. Does 3.34821428571428571428571428... make sense? It’s got a couple
of problems. One is that it won’t fit in the answer grid. The other is that it’s not a good answer to the question, how many workers are needed? You can’t schedule 3.348 workers. That’s where math meets reality. Always look back at the reality when you’re solving a GED math problem.

If 15,000 divided by the number of bolts one worker can make gives you 3.3-something, then you need more than three workers. You need four guys to make the bolts. Does that make sense? It seems to. That’s the best answer.

Making a Problem into a Formula

The third step of solving a math word problem, putting together a plan, is the same thing as making a problem into a formula. That’s one thing the GED math test definitely asks you to do. Sometimes the GED test doesn’t ask you to solve the problem.
It just gives you a choice of five formulas and asks you to select the right one. So, the math test isn’t just testing your ability to get the correct answer. It’s testing your ability to go through the process of solving the problem. And, being able to solve this type of problem will help you solve other word problems, as well as helping you understand formulas and equations better.

Let’s try walking through this type of GED question.

Jerry wants to buy twelve pizzas. The pizza place has a discount special, where you buy 2 pizzas and get the third ½ off. If P is the price of a pizza, which formula shows the price of twelve pizzas?

1) $12P \div 2 + 2P$
2) $\frac{1}{2} \times 12P$
3) $12P - .5P$
4) $8P + .5(4P)$
5) $2 - \frac{1}{2} + 12P$

Okay, so what do these formulas really mean? Let’s work out the problem from the formulas in the answer choices, to see if they match up with the question. P is the price of pizzas.

The first formula is: $12P \div 2 + 2P$

In words, this formula means 12 pizzas, divided by 2, plus 2 pizzas. So, twelve pizzas are half off (that’s the divided by 2), and 2 pizzas are full price. That’s not right. Jerry is buying twelve pizzas, not 14, and he’s not going to get half off of 12 of them.
The next formula is: $\frac{1}{2} \times 12P$

In words, this formula means $\frac{1}{2}$ off of 12 pizzas. Think of the multiplication sign as the word “of.” One half of the price of twelve pizzas. That’s half off the entire order. That’s not right. Only every third pizza is half off.

The next formula is: $12P - 0.5P$

In words, this formula means twelve pizzas minus the price of half a pizza. That’s only one pizza that’s half off. That’s not right, either. Jerry should have more than that off his total.

The next formula is: $8P + 0.5(4P)$

In words, this formula means 8 pizzas plus half of 4 pizzas. Point-five means half, just like a fraction, so $\frac{1}{2}$ and .5 are interchangeable in a math problem. They mean exactly the same thing.

So, is this formula right? If the deal is buy 2, get 1 half off, there should be twice as many full-price pizzas as half-price pizzas. So there are. 8 is twice 4. So for every 2 full-price pizzas, Jerry pays half for one other pizza. And there should be 12 pizzas all together. And there are. 8 pizzas and 4 half-price pizzas totals 12. There’s your answer. But, just to check, let’s look at the last answer.
The final formula is: $2 - \frac{1}{2} + 12P$

This formula starts out with 2 minus a half, that’s $1\frac{1}{2}$. So it’s $1\frac{1}{2}$ (probably dollars) plus 12 pizzas. That means Jerry would be paying $1.50 more than the normal price of twelve pizzas. That’s definitely not right! The correct answer is answer 4.

Understanding what formulas mean is very important to passing the GED math test, so pay attention to being able to “translate” formulas into real-world information and understand what they really mean.