

Daily Dollar Questions 2017

Level 5

For Year 9, Year 10, Year 11 students.

Curriculum level 5.



What to do.

For students.

1. You may work in pairs or on your own and your teacher or parent can help you.
2. Do the questions.
3. If you are right you will get the dollar value for each question.
4. There are usually 5 questions each day.
5. Each day's questions total \$100 in value.
5. Your teacher will tell you the answers and then you can work out how many dollars you have earned for the day.
6. Add the dollars you have earned each day in the Daily Dollar Questions and get a total which you can compare at the end of the week with others in your class.
7. Perhaps your teacher may award a prize for the highest totals for the week!
8. Good luck !



2017

Daily Dollar Questions

Level 5.

Wednesday:

“Hidden Figures” maths movie.



This is a very popular movie released this year. It tells the true story of three mathematicians who worked at NASA during the 1960's. Katherine Johnson, Dorothy Vaughan, Mary Jackson.

Here is part of the script from the early part of the movie.

**INT. WEST VIRGINIA COLLEGIATE INSTITUTE - ANOTHER DAY ...staring out another window in a new classroom.
A fancy classroom in a prestigious academy.
The class is full of OLDER STUDENTS dressed in the best they have.**

Unbeknownst to Katherine, her new teacher, PROFESSOR GRAVES, is standing right in front of her.

**PROFESSOR GRAVES “Ms. Coleman.”
Katherine whips back to reality. Embarrassed.**

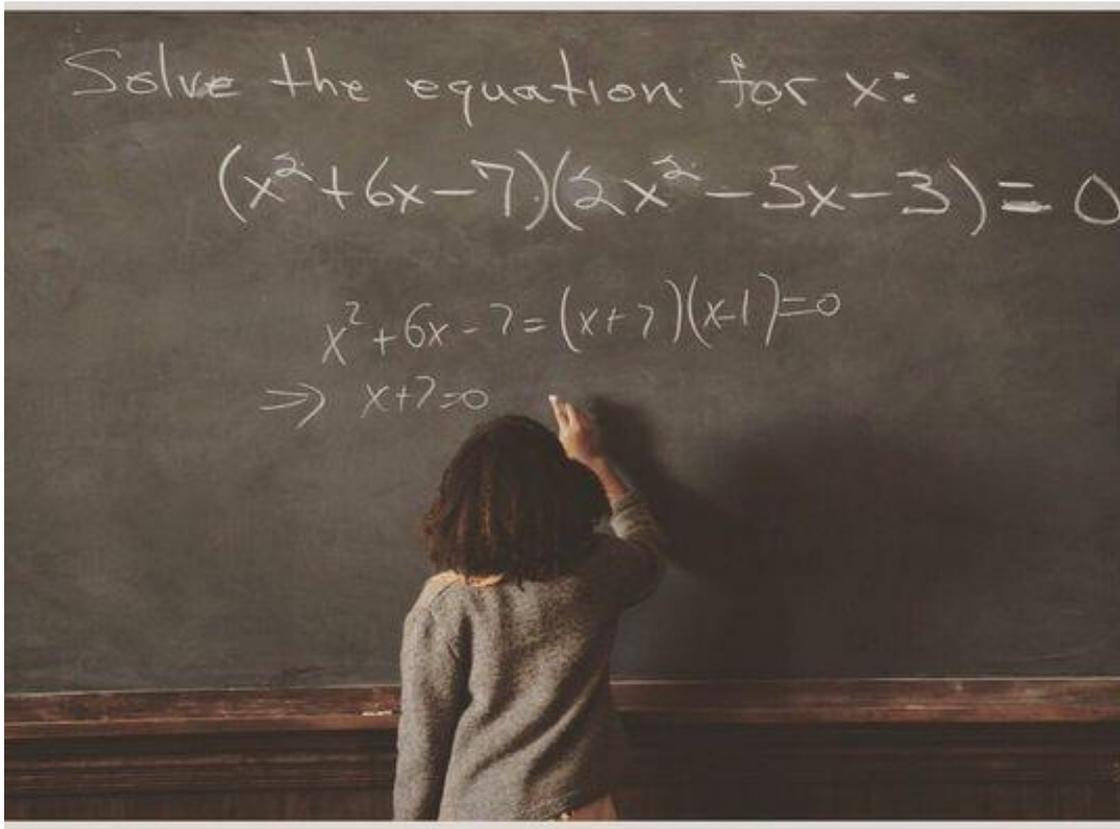
PROFESSOR GRAVES (CONT'D) “You find something out there more interesting than quadratic equations?”

**KATHERINE (@8 YEARS OLD) “Yes, sir. I mean no, sir.”
Professor Graves holds out a piece of chalk.**

PROFESSOR GRAVES “Why don’t you figure out the equation on the board?”

Katherine looks at the chalkboard. The equation looks Greek: symbols, signs, parentheses. Professor Graves pushes the chalk closer.

PROFESSOR GRAVES (CONT'D) “Go on.”



Katherine takes the chalk. Stands. Walks sheepishly to the front of the class. Every eye on her.

She stands in front of the blackboard, the equation. Studies it for the longest time. Inspecting every number, sign, symbol. Wheels churning. Then she starts to write. Slow and meticulous at first. Then fast. Faster. With passion and fury. The Students crane their heads.

Professor Graves rubs his temple. And Katherine writes on, chalk dust dropping like snow from her chalk stick. On and on and on...until she's at the very bottom, far side of the board. She circles the answer. Stands and faces the class.

The equation behind her dwarfing her in stature.

She clears her throat...

KATHERINE (@8 YEARS OLD) "If the product of two terms is zero, then common sense says at least one of the two terms has to be zero to start with. So, if you move all the terms over to one side, you can put the quadratics into a form that can be factored, allowing that side of the equation to equal zero. Once you've done that, it's pretty straight forward from there... "

**You can hear a pin drop.
There's nothing to say.**

Katherine shuffles. Adjusts her glasses. "...Sir".

Questions!

The 100 Dollar Question.

What are the four solutions of the equation which Katherine solves?

$$(x^2 + 6x - 7) \cdot (2x^2 - 5x - 3) = 0$$

Methods that can be used are

- (a) Trial and error! Just trial some possible values for x and put them into the equation and see if it comes to 0.
One that I suggest looking at the photo is -7 .
- (b) Solve by using quadratic equations and the method which Year 10 students will know.

There are 4 solutions. For each solution you get 25 Dollars!

