

## Linear equation word problems

Dimitri is helping to plan the school talent show. Each performer for the talent show has 6 minutes for his or her performance, which includes transition time between performances. If the introduction for the talent show is 24 minutes long and the entire show, including the introduction, will last 150 minutes, how many different performances can the talent show accommodate?

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A 21

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B 24

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C 25

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D 29

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The property taxes in a town decrease as the distance from the local elementary school increases. The greatest property taxes are 4.5%, and for every 10 miles from the school, property taxes decrease by 0.5 percentage points. If a house's property taxes are 3%, what is the distance of that house from the school?

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A 10 miles

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B 20 miles

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C 30 miles

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D 40 miles

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Dalia is installing a tile floor in a rectangular room. Dalia has 152 tiles available to tile the room. If each row requires  $9\frac{1}{2}$  tiles, and 19 tiles break while Dalia is laying the floor, how many full rows of unbroken tile can she install before running out of tiles?

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A 12

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B 14

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C 16

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D 18

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Phytoremediation is the use of plant growth to purify pollutants from soil, water, or air. Suppose that a crop of brake ferns can remove **15 milligrams (mg)** per square meter of a particular pollutant from the soil in **20 weeks**. After **20 weeks**, the ferns are harvested and a new crop is planted. If  $c$  represents the number of crops of brake ferns needed to phytoremediate soil contaminated with **170 mg** per square meter of the pollutant down to healthy levels of **5 mg** per square meter, which equation best models the situation?

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A  $170 - 20c = 5$

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B  $170 + 20c = 5$

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C  $170 - 15c = 5$

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D  $170 + 15c = 5$

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One of the rules in a public speaking contest requires contestants to speak for as close to **5 minutes (300 seconds)** as possible. Contestants lose **3 points** for each second they speak either over or under **5 minutes**. Which expression below can be used to determine the number of points a contestant loses if she speaks for  $x$  seconds?

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A  $3|x - 300|$

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B  $5|x - 300|$

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C  $3|x + 300|$

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D  $\frac{3}{5}|x + 300|$

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