

# Why Are Unicorns Healthier Than Dragons?

Cross out the letters above each correct answer (some answers are rounded). When you finish, write the remaining letters in the spaces at the bottom of the page.



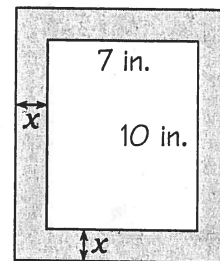
- The length of a rectangle is 4 m more than the width. The area is  $30 \text{ m}^2$ . Find the width and length.
- The length of a photograph is 1 cm less than twice the width. The area is  $91 \text{ cm}^2$ . Find the width and length.
- The length of a rectangular mural is 2 ft more than three times the height. The area is  $165 \text{ ft}^2$ . Find the height of the mural.

- Joe Goodnuff had been eating on a square card table until he bought a new rectangular dining table. The new table is 2 ft longer and 1 ft wider than the card table. It has an area of  $24.75 \text{ ft}^2$ . How long was a side of his old square card table?

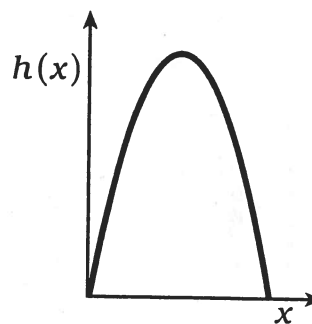
- Hugh Betcha launched a model rocket with an initial speed of 88 feet per second. After how many seconds will the rocket be 40 feet high?  
**NOTE:** The approximate height  $h$  (in feet) is modeled by:  $h = -16t^2 + vt$ , where  $t$  is the time in motion (in seconds) and  $v$  is the initial upward velocity (in feet per second).

- The dimensions of a rectangular flower garden were 8 m by 15 m. Each dimension was increased by the same amount. The garden then had an area of  $198 \text{ m}^2$ . Find the dimensions of the new garden.

- A 7 by 10 in. mirror was put in a frame and hung on the wall. The mirror and frame together cover an area of  $130 \text{ in.}^2$ . How wide is the frame?



- Each of the "golden arches" at a McDonald's restaurant is in the shape of a parabola. Each arch is modeled by:  $h(x) = -x^2 + 6x$ , where  $h(x)$  is the height of the arch (in feet) at a distance  $x$  (in feet) from one side.
  - Find the equation of the axis of symmetry.
  - How high is the arch at the axis of symmetry?



<b>TH</b> 8 ft	<b>IT</b> $3.83 \times 7.83 \text{ m}$	<b>IS</b> $11 \times 18 \text{ m}$	<b>EK</b> $x = 3$	<b>EY</b> $8 \times 15 \text{ cm}$	<b>D</b> $x = 2$	<b>ID</b> 0.5 s and 5 s	<b>ON</b> $12 \times 16 \text{ m}$
<b>I</b> 3.5 ft	<b>TS</b> 0.8 s and 4 s	<b>BE</b> 1.5 in.	<b>MO</b> 1.8 in.	<b>ST</b> 9 ft	<b>OP</b> $7 \times 13 \text{ cm}$	<b>KE</b> $3.52 \times 7.72 \text{ m}$	<b>EP</b> 7.09 ft

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