

# Interpreting Functions and Parameters

Algebra 1 • Section 11.4

Name: \_\_\_\_\_

Date: \_\_\_\_\_

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## Quick Review and Helpful Hints

Exponential models multiply by a constant factor over equal input intervals. Compare the initial value, multiplier, and long-term behavior before deciding what the model means.

▷ **Example:** Evaluate  $100(1.05)^2$ .

**Work:** Square the growth factor:  $1.05^2 = 1.1025$ . Then multiply:  $100(1.1025) = 110.25$ .

★ **Answer:** 110.25

## ◆ Practice Problems

Solve each problem. Show enough work that another student could follow your thinking.

1. In  $y = mx + b$ , what does  $m$  represent?

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2. In  $y = mx + b$ , what does  $b$  represent?

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3. In  $A = 500(1.06)^t$ , what is 500?

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4. In  $A = 500(1.06)^t$ , what percent change?

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5. In  $h = -16t^2 + 48t + 6$ , what does 6 represent?

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6. In  $C = 35 + 12x$ , what does 35 represent?

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7. In  $C = 35 + 12x$ , what does 12 represent?

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8. In  $P = -2(x - 4)^2 + 30$ , what is the vertex?

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9. In  $y = a(b)^x$ , what does  $b > 1$  mean?

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10. In  $y = a(b)^x$ , what does  $0 < b < 1$  mean?

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## ◆ Word Problems

11. A phone bill is  $B = 22 + 0.10t$ . Interpret 0.10.

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12. A medicine model is  $M = 80(0.75)^h$ . Interpret 0.75.

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## Answer Keys

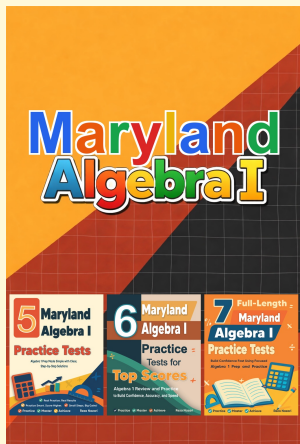
- |                                  |                           |
|----------------------------------|---------------------------|
| 1. Slope/rate of change          | 7. Cost per unit          |
| 2. Initial value/ $y$ -intercept | 8. (4, 30)                |
| 3. Initial amount                | 9. Growth                 |
| 4. 6% growth                     | 10. Decay                 |
| 5. Initial height                | 11. 10 cents per text     |
| 6. Fixed/startup cost            | 12. 75% remains each hour |

### Step-by-Step Explanations

- Think of  $m$  as the step size: it's how far  $y$  moves every time  $x$  goes up by 1.
- Set  $x = 0$  and the  $mx$  part disappears, leaving  $b$  as the starting height.
- When  $t = 0$  the growth factor is just 1, so 500 is the amount you begin with.
- Split 1.06 into  $1 + 0.06$  — the 0.06 tacked on is a 6% gain each period.
- At  $t = 0$  both  $t$  terms vanish, so 6 is the height the moment you start the clock.
- That 35 is on the bill before you've added a single unit — the cost just to get going.
- Every extra unit of  $x$  piles on another 12, so 12 is the price per unit.
- Vertex form parks the turning point right out front —  $(h, k)$  reads straight off as (4, 30).
- A base above 1 nudges each output higher than the one before, so the function climbs.
- A base squeezed between 0 and 1 trims a bit off each step, so the values keep shrinking.
- The number multiplying  $t$  is the per-text rate — every additional text adds another 10 cents.
- Multiplying by 0.75 keeps three-quarters around, which means 25% clears out every hour.



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