UNIT 4: Modeling Real-World Situations with a SYSTEM of Equations in $[y=mx+b]$ form.

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On your own; #4 (Refer to page 12, #5 for help.)

Kallie's Work-outs

Kallie is conditioning for try-outs. She has **already run 10 miles**. She will run **2 miles per day**.

___Y___ = distance and __X__ = #days

Equation:

$$Y = 2x + 10$$
$$2(20) + 10$$
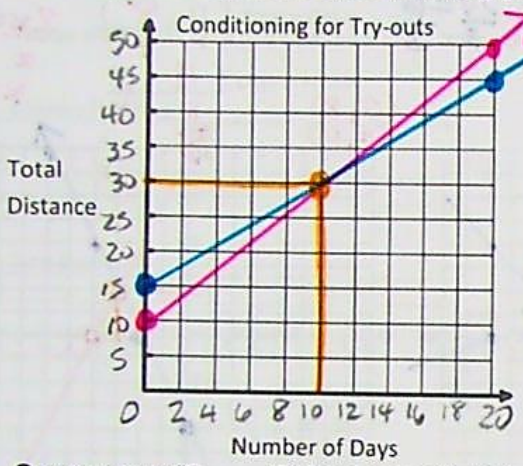$$40 + 10$$

x	y
0	10
20	50

Blake's Work-outs

Blake is conditioning for try-outs. He has **already run 15 miles**. He will run **1.5 miles per day**.

___Y___ = distance and __X__ = #days

Equation:

$$Y = 1.5x + 15$$
$$1.5(20) + 15$$
$$30 + 15$$

x	y
0	15
20	45

Graph both equations on the following grid. Use an interval of 2 on the x-axis and 5 on the y-axis.

Conditioning for Try-outs

Total Distance (y-axis)
Number of Days (x-axis)

1) Name the point of intersection: (10, 30)

2) What does the point of intersection mean to the situation? (Include what each value means, what it means if they exercise more days and what it means if they exercise fewer days.)

At 10 days both runners have run 30 miles. Before 10 days Blake's distance is greater, but after 10 days Kallie's distance is more.

On your own; #5 (Refer to page 12, #6 for help.)

Bethany's Cabin

Bethany is renting a cabin in Tennessee. They charge a **$200 cleaning fee** and **$100 per night**.

___Y___ = total cost and __X__ = #nights

Equation:

$$Y = 100x + 200$$
$$100(8) + 200$$
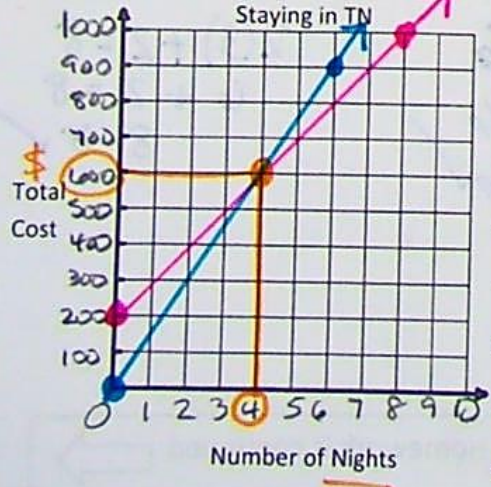$$800 + 200$$

x	y
0	200
8	1000

Mandy's Hotel

Mandy is renting a hotel room at the Lodge in Tennessee. **They don't charge a cleaning fee** and **$150 per night**.

___Y___ = total cost and __X__ = #nights

Equation:

$$Y = 150x$$
$$150(6)$$

x	y
0	0
6	900

Graph both equations on the following grid. Use an interval of 1 on the x-axis and 100 on the y-axis.

Staying in TN

Total Cost (y-axis)
Number of Nights (x-axis)

1) Name the point of intersection: (4, 600)

2) What does the point of intersection mean to the situation? (Include what each value means, what it means if they stay more nights and what it means if they stay fewer nights.)

Both rentals cost $600 for 4 nights. For less than 4 nights Mandy's Hotel is cheaper, but for more than 4 nights it costs less for Bethany's Cabin.