

# Review on Graphs and Equations

## Review on Graphs and Equations

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Summary	<p>In this lesson, the students will solve individually or in small groups the set of problems. For each problem, the teacher will lead a discussion based on the students' work (the teacher should identify strong and weak points in the students' work).</p> <p>The class is organized around four main problems. Within each problem students will answer different questions.</p>
Goals	<p>1. To review main concepts seen during the year before the last assessment.</p>
Materials	<p>Handouts</p>
Keywords	<p>Balancing Equations</p> <p>Contextualized Situations</p> <p>Full Class Discussion</p> <p>Interpretation of Algebraic Expressions</p> <p>Interpretation of Graphs</p> <p>Interpretation of Stories</p> <p>Linear Functions</p> <p>Non-Linear Functions</p> <p>Production of Algebraic Expressions</p> <p>Production of Equations</p> <p>Production of Stories</p> <p>Solving Equations</p>

### Activity Plan:

Part 1: Graphics [45 minutes]

Students will individually answer all the questions in Handouts Page 1-3.

The teacher will collect students' work and will choose a few answers to discuss with the whole class.

Answers for Handout Page 1:

<b>Story: "According to the graph, Francis..."</b>	<b>Graphs</b>
...was stationary (stopped) during the whole time.	A
...moved faster and faster towards his home.	D
...moved faster and faster away from his home.	F
...started at his home.	B,E,F
...moved farther and farther away from his home.	B,C,E,F
Francis moved at a steady pace.	B,C,G
...moved slower and slower away from his home.	E
...moved closer and closer to his home.	D,G,H
...moved slower and slower towards his home.	H

Answers for Handout Page 2:

<b>Story about the height of the water in the tub.</b>	<b>Graphs</b>
It does not change.	A
The bathtub began empty.	B,E,F
It decreases all the time.	D,G,H
The tub is filling up faster and faster.	F
The tub is filling up slower and slower.	E
It increases all the time.	B,C,E,F
The water height changes at a constant rate.	B,C,G
The tub is draining faster and faster.	D
The tub is draining slower and slower.	H

Answers for Handout Page 3:

<b>Story about Carolina's bank balance</b>	<b>Graphs</b>
Her account began with no money in it.	B,E,F
It decreases all the time.	D,G,H
Her balance increases faster and faster.	F
It does not change.	A
Her balance increases slower and slower.	E
It increases all the time.	B,C,E,F

Her balance changes at a constant rate.	B,C,G
Her balance decreases faster and faster.	D
Her balance decreases slower and slower.	H

Part 2: Algebra notation and equations [45 minutes]

Students will individually answer all the questions in Handout Page 4.

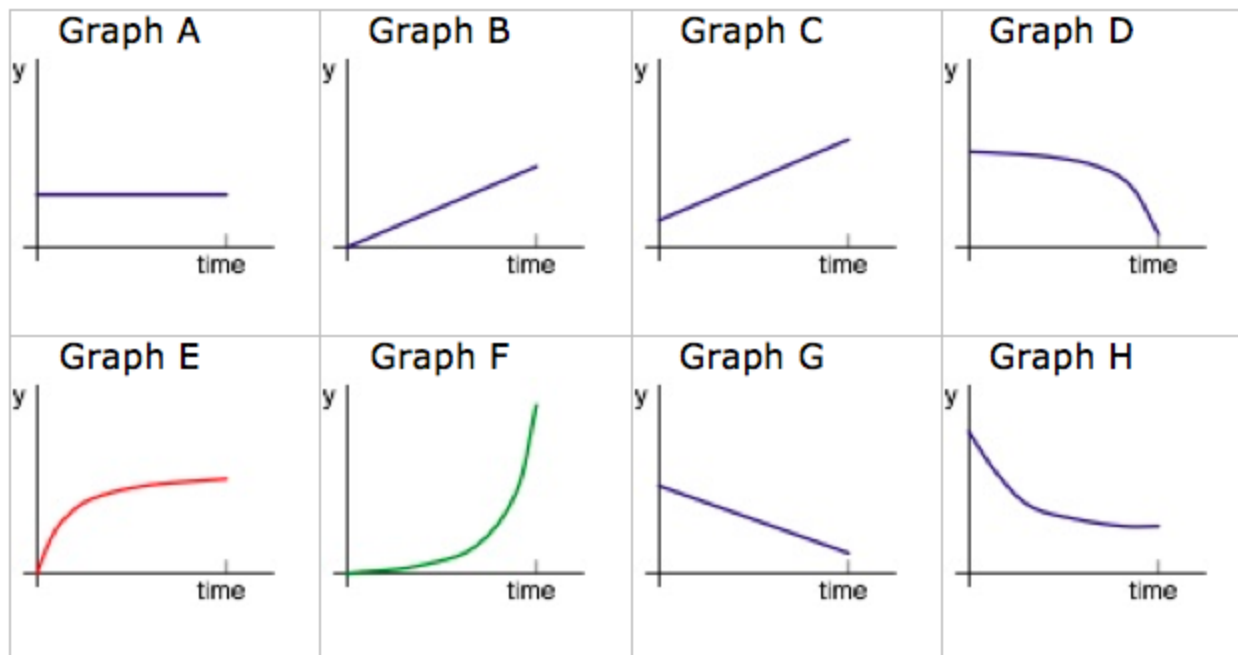
The teacher will choose a few answers to discuss with the whole class.

# Handout: Finding the Graph for Francis

(Page 1)

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

Problem 1. Francis is a jogger. The y-axis shows his **distance from his home**. Which graphs match which story?

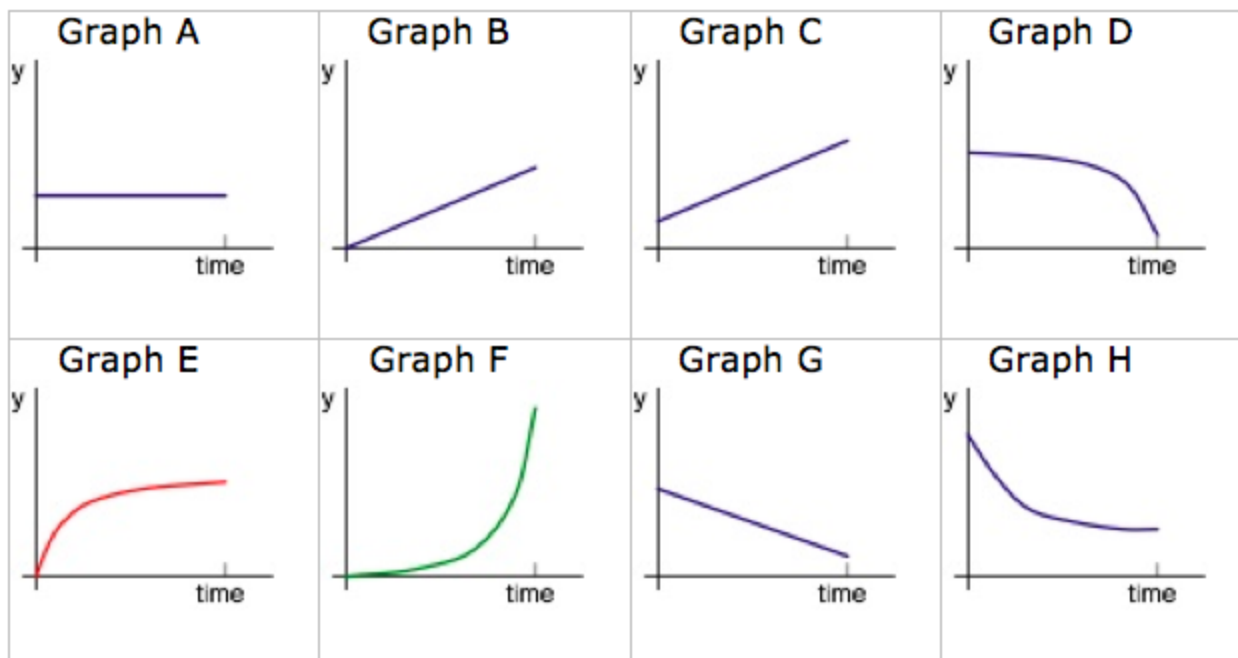


Story: "According to the graph, Francis..."	Graphs
...was stationary (stopped) during the whole time.	
...moved faster and faster towards his home.	
...moved faster and faster away from his home.	
...started at his home.	
...moved farther and farther away from his home.	
Francis moved at a steady pace.	
...moved slower and slower away from his home.	
...moved closer and closer to his home.	
...moved slower and slower towards his home.	

## Handout: Finding the Graph for the Water Tub (Page 2)

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

Problem 2. Consider a bathtub. The  $y$ -axis shows the **height of the water** in the tub. Which graphs match which story?

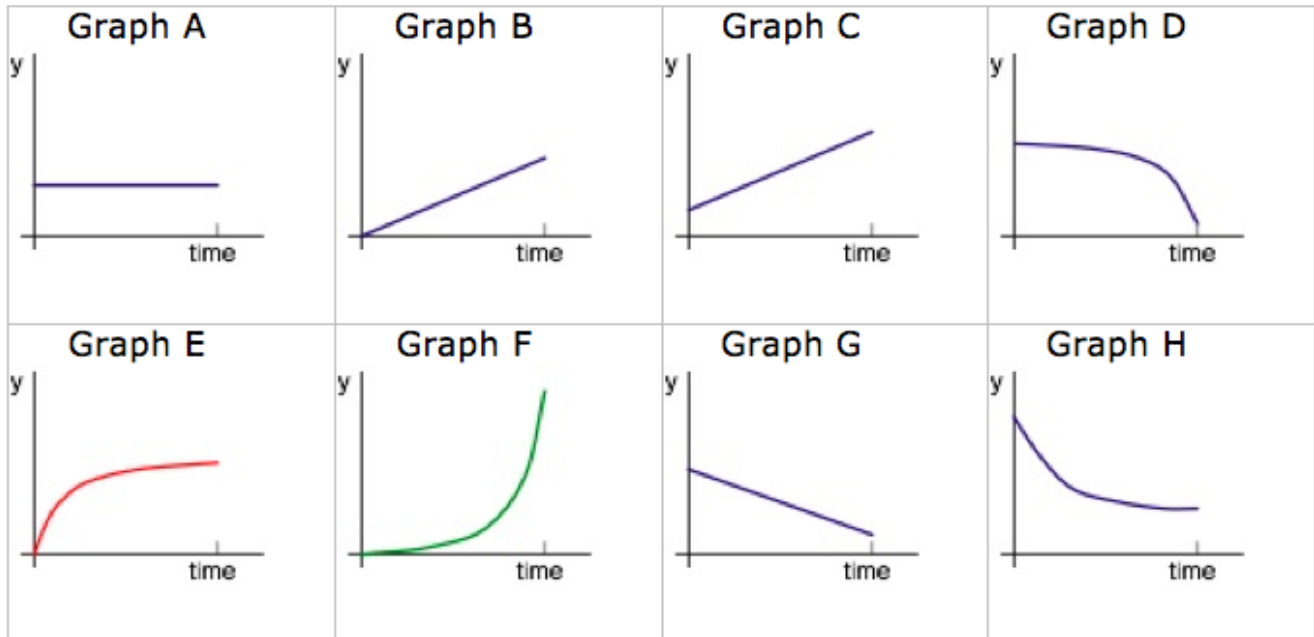


Story about the height of the water in the tub.	Graphs
It does not change.	
The bathtub began empty.	
It decreases all the time.	
	F
	E
It increases all the time.	
The water height changes at a constant rate.	
The tub is draining faster and faster.	
The tub is draining slower and slower.	

## Handout: Finding the Graph for the Bank Balance (Page 3)

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

Problem 3. Carolina has a bank account. The  $y$ -axis shows her **bank balance**. Which graphs match which story?



Story about Carolina's bank balance	Graphs
Her account began with no money in it.	
It decreases all the time.	
	F
It does not change.	
	E
It increases all the time.	
Her balance changes at a constant rate.	
	D
	H

## Handout: Finding the Graph for the Bank Balance (Page 4)

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

Problem 4. Roger and Sarah have been playing with numbers. They each created a rule for changing any number you give them.

**Roger's rule:** I triple the number and then take away 5.

**Sarah's rule:** I start with 12 and then add twice the number to it.

**Write their rules with algebra.**

(a) Roger's rule (use algebra): \_\_\_\_\_

(b) Sarah's rule (use algebra): \_\_\_\_\_

(c) Write an equation that makes (or sets) Roger's rule equal to Sarah's rule and solve the equation:

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(d) Explain what the solution means: