Assignment Self-Monitoring Sheet

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: 9/18 Topic: Movie Ticket Analysis/Linear Solving	0 1 2	
Tuesday Date: _____ Topic: _____	0 1 2	
Wednesday Date: _____ Topic: _____	0 1 2	
Thursday Date: _____ Topic: _____	0 1 2	
Friday Date: _____ Topic: _____	0 1 2	

Level 1 Solutions Homework

1) {−16}
2) {−7}
3) {−3}
4) {−190}
5) {−17}
6) {11}
7) {19}
8) {−20}
9) {5}
10) {−6}

Level 2 Solutions

1) {19}
2) {2}
3) {−12}
4) {−7}
5) {−12}
6) {17}
7) No solution.
8) {−3}
9) {−0.5}
10) {−9}

Level 3 Solutions Homework

1) {7} 2) {6} 3) {–4} 4) {7}
5) {–2} 6) {5} 7) –9 8) 103

9) If f(x) is a linear function, f(3) + f(4) = 10, and f(5) + f(6) = 18, then what's f(7)?

$3m+b+4m+b=10$
$7m+2b=10$

$5m+b+6m+b=18$
$11m+2b=18$

Solve System $\begin{cases} 7m+2b=10 \\ 11m+2b=18 \end{cases}$

$-4m=8$
$m=-2$

$7(-2)+2b=10$
$-14+2b=10$
$2b=24$
$b=12$

$f(x)=-2x+12$
$f(7)=-2(7)+12$
$f(7)=-14+12$
$f(7)=-2$

Using Elimination

Level 3: #9 correction Homework

$y=mx+b$ $f(x)=2x-2$

9) If f(x) is a linear function, f(3) + f(4) = 10, and f(5) + f(6) = 18, then what's f(7)?

$3m+b+4m+b=10$
$-1(7m+2b=10)$
$5m+b+6m+b=18$
$11m+2b=18$

$-7m-2b=-10$
$11m+2b=18$
$4m=8$

$m=2$
$b=-2$

$7(2)+2b=10$
$14+2b=10$
$-14\quad -14$
$2b=-4$

$f(7)=2(7)-2=12$

Class Plan:

1. Warm-up
2. Mathematician Project!
3. "How Old Am I?" Practice
Criterion D Assessment

Quiz 1.1 - Linear Equations

Tomorrow! Tuesday, Sept. 19th

Warm-up: Write the equation of the line.
Discuss at table (no need to recreate graph.)

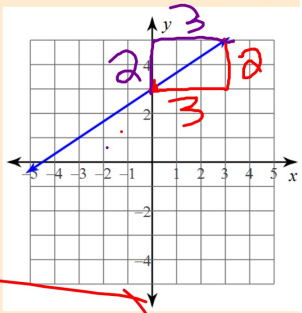
1) What is the gradient?

slope = $\frac{2}{3}$

2) What is the y-intercept?

y-int = 3

(0, 3)



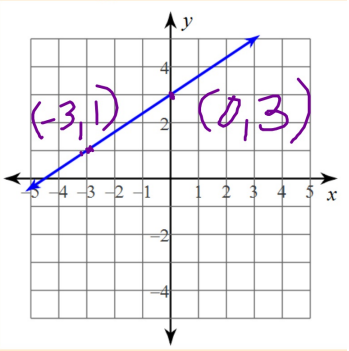
$y = \frac{2}{3}x + 3$

1) How can we solve for the gradient ***algebraically?***

$m = \frac{2}{3}$

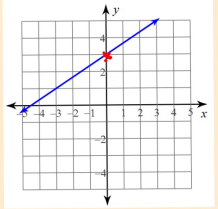
$(0,3)\ (-3,1)$

$\frac{3-1}{0+3} = \frac{2}{3}$



1) How can we solve for the y-intercept ***algebraically?***

$y = mx + b$



$m = \frac{2}{3}$ $(-3,1)$

(x,y)

$1 = \frac{2}{3}(-3) + b$

$1 = -\frac{6}{3} + b$

$1 = -2 + b$

$+2 \quad +2$

$3 = b$

$y = \frac{2}{3}x + 3$

Mathematician Project!

José F. Escobar

José F. Escobar

José Fernando "Chepe" Escobar (born on 20 December 1954, in Manizales, Colombia) was a Colombian mathematician known for his work on differential geometry and partial differential equations. He was professor at Cornell University.[1][2]

He completed his mathematical undergraduate program at Universidad del Valle, Colombia. He received a scholarship to do a masters at Institute of Pure and Applied Mathematics in Brazil.

Escobar obtained his Ph.D. from the University of California, Berkeley in 1986. In his thesis he solved the problem known as "the boundary Yamabe problem", that had been previously settled only for the case of manifolds without boundary.[2]

He died from cancer on 3 January 2004, at the age 49.[2]

Among the awards he received for his work were "the Alfred Sloan Fellowship" and "the Presidential Faculty Fellowship"

https://en.wikipedia.org/wiki/Jos%C3%A9_F._Escobar

José F. Escobar

At Cornell, Escobar was a thesis adviser to many graduate students and a mentor to several postdoctoral associates. He also was deeply involved in encouraging mathematical development in South American countries and in helping the Cornell mathematics department recruit many Latin American graduate students.

As a young man, he was a competitive diver and became the national champion of Colombia. He also was an avid soccer player and salsa dancer.

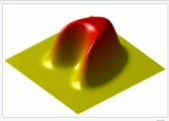
He had his first bout with cancer while he was in graduate school, and despite a pessimistic diagnosis from his doctors he made a total recovery. His colleagues note that this experience helped shape his personality, making him a man of great strength, compassion, and optimism.

Partial differential equation

From Wikipedia, the free encyclopedia
(Redirected from Partial differential equations)

In mathematics, a **partial differential equation** (**PDE**) is a differential equation that contains unknown multivariable functions and their partial derivatives. (A special case are ordinary differential equations (ODEs), which deal with functions of a single variable and their derivatives.) PDEs are used to formulate problems involving functions of several variables, and are either solved by hand, or used to create a relevant computer model.

PDEs can be used to describe a wide variety of phenomena such as sound, heat, electrostatics, electrodynamics, fluid dynamics, elasticity, or quantum mechanics. These seemingly distinct physical phenomena can be formalised similarly in terms of PDEs. Just as ordinary differential equations often model one-dimensional dynamical systems, partial differential equations often model multidimensional systems. PDEs find their generalisation in stochastic partial differential equations.



A visualisation of a solution to the two-dimensional heat equation with temperature represented by the third dimension

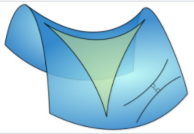
https://en.wikipedia.org/wiki/Partial_differential_equation

Differential geometry

From Wikipedia, the free encyclopedia

Differential geometry is a mathematical discipline that uses the techniques of differential calculus, integral calculus, linear algebra and multilinear algebra to study problems in geometry. The theory of plane and space curves and surfaces in the three-dimensional Euclidean space formed the basis for development of differential geometry during the 18th century and the 19th century.

Since the late 19th century, differential geometry has grown into a field concerned more generally with the geometric structures on differentiable manifolds. Differential geometry is closely related to differential topology and the geometric aspects of the theory of differential equations. The differential geometry of surfaces captures many of the key ideas and techniques characteristic of this field.

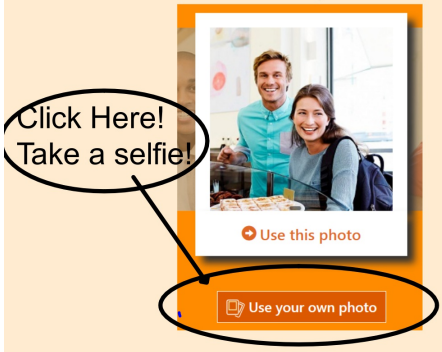


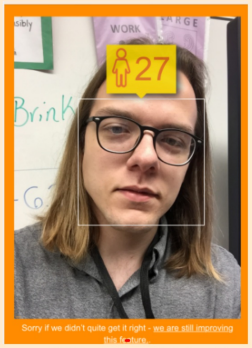
A triangle immersed in a saddle-shape plane (a hyperbolic paraboloid), as well as two diverging ultraparallel lines.

https://en.wikipedia.org/wiki/Differential_geometry

How-Old.net
How old do I look? #HowOldRobot

Write down:
(actual, how-old.net?





(22, 27)

How-Old.net
How old do I look? #HowOldRobot

Do: "How Old Am I?" Linear Analysis (Criterion D: Real Life)

Done? Look over solutions (posted online)

Quiz 1.1 - Linear Equations

Tomorrow! Tuesday, Sept. 19th

rom the MYP
riterion D Rubric

ow will I be assessed?

se this as a study uide!

onsider these bullet oints an 8, PERFECT SCORE

- Correct graph is titled with axes labeled.
- Mathematical strategies are done **without error**.
  - Line of Best Fit
    - Justification provided and appropriate.
  - Gradient
    - Both Algebraic Formula and Gradient Triangle
  - Linear Equation
    - Y-intercept from the graph
    - Y-intercept from algebra (8)
- Real-life interpretation of gradient and variables.
- Prediction **without error** and reasonably defended.
- Equation is verified **without error** and accuracy is defended.
- Additional real life factors are considered and are reasonable.

How-Old.net Age Prediction Analysis **Name** Name

The table below compares participants' actual age and the age that How-Old.net predicted that they were.

*Choose Points

1. **Choose and list *at least* 6 points** from the data table.

Why did you choose these points?

Actual Age (X)	How-Old.net Age (Y)
3	4
5	6
7	45
11	10
14	23
15	34
20	23
31	31
41	50
49	39

SOLUTION

The table below compares participants' actual age and the age that How-Old.net predicted that they were.

1. **Choose and list *at least* 6 points** from the data table.

(3,4) (14,23) (31,31)
(7,45) (20,23) (41,50)

Why did you choose these points?

I chose points that included both big & small differences

2. **Plot the points** you chose in #1. Clearly **label** your axes.
3. Define the x and y-values:

x: Actual Age y: Estimated Age

4. Next, **estimate** a "line of best fit" for your data points and draw it on your graph.

Actual Age (x)	How-Old.net Age (y)
3	4
5	6
7	45
11	10
14	23
15	34
20	23
31	31
41	50
49	39

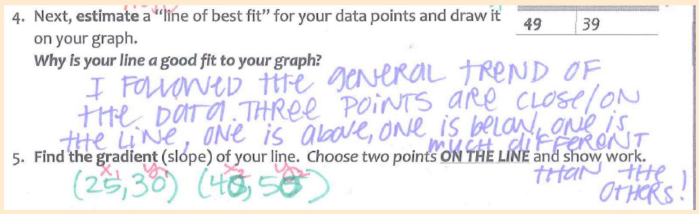
*Plot Points for Line of Best Fit

2. **Plot the points** you chose in #1. Clearly **label** your axes.
3. Define the x and y-values:

   x: _____ **y:** _____

4. Next, **estimate** a "line of best fit" for your data points and draw it on your graph.
   Why is your line a good fit to your graph?

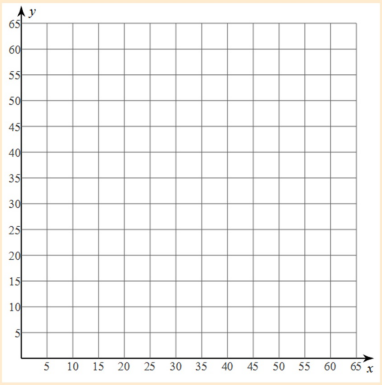
SOLUTION



4. Next, **estimate** a "line of best fit" for your data points and draw it on your graph.
   Why is your line a good fit to your graph?
   I FOLLOWED THE GENERAL TREND OF THE DATA. THREE POINTS ARE CLOSE/ON THE LINE, ONE IS ABOVE, ONE IS BELOW, ONE IS MUCH DIFFERENT THAN THE OTHERS!
5. **Find the gradient** (slope) of your line. *Choose two points **ON THE LINE*** and show work.
   (25, 30) (40, 50)

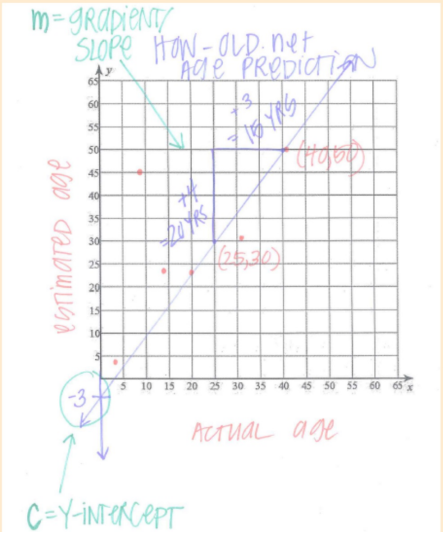
49 | 39

How-old.net



Actual

SOLUTION



*Find the Slope/Gradient

5. **Find the gradient** (slope) of your line. *Choose two points* ***ON THE LINE*** and show work.

a) Interpret the meaning of the **gradient** by answering questions below:
What does your gradient represent in this situation?

What does it tell you about the data?

"As the actual age increases by _____ years the how-old.net increases by _____"