Pick UP
the

W arm U p

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1. The point A has coordinates $(4, -8)$ and the point B has coordinates $(-2, 4)$.

(a)   Write down the coordinates of C, the midpoint of line segment AB.

The point D has coordinates $(-3, 1)$.

(b)   Find the gradient of the line DC.

(c)   Find the equation of the line DC. Write your answer in the form $ax + by + d = 0$ where a, b and d are integers.
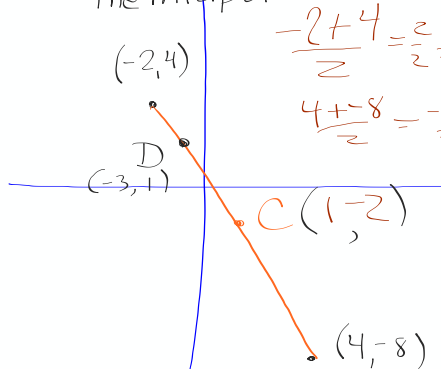
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a) COORDINATES OF the midpoint

$(-2, 4)$

$\dfrac{-2+4}{2} = \dfrac{2}{2} = 1$

$\dfrac{4+-8}{2} = \dfrac{-4}{2} = -2$

D $(-3, 1)$

$C(1, -2)$

$(4, -8)$

b) gradient of DC

$\dfrac{1--2}{-3-1} = \dfrac{1+2}{-4} = \dfrac{3}{4} \left(\dfrac{-3}{4}\right)$

c) equation of DC in $ax + by + d = 0$

$4y + 8 = -3x + 3$

$\boxed{3x + 4y + 5 = 0}$

$-3x - 4y - 5 = 0$

$$(1, -2) \quad gr \quad -\frac{3}{4}$$

$$y = mx + b \qquad OR \qquad y - y_1 = m(x - x_1)$$

$$-2 = \left(\frac{-3}{4}\right)(1) + b \qquad\qquad y + 2 = \frac{-3}{4}(x - 1)$$

$$-2 = -\frac{3}{4} + b$$

$$-8 = -3 + 4b$$

$$-5 = 4b$$

$$b = \frac{-5}{4} \qquad\qquad y = \frac{-3}{4}x - \frac{5}{4}$$

$$\frac{3}{4}x + y + \frac{5}{4} = 0$$

$$3x + 4y + 5 = 0$$

$$-3x - 4y - 5 = 0$$

---

2 Consider the frequency distribution of heights of elementary school stud
below:

132.5

height h (cm)	frequency
$130 \le h < 135$	2
$135 \le h < 140$	3
$140 \le h < 145$	5
$145 \le h < 150$	7
$150 \le h < 155$	6
$155 \le h < 160$	2

a. Determine the midpoint of the $130 \le h < 135$ interval.

b. Calculate the approximate mean height of the students.

c. Determine the modal class interval.

i'm

② Consider the frequency distribution of heights of elementary school stud
below:

L_1 L_2

137.5
137.5
142.5
147.5
152.5
157.5

height h (cm)	frequency
$130 \leq h < 135$	2
$135 \leq h < 140$	3
$140 \leq h < 145$	5
$145 \leq h < 150$	7
$150 \leq h < 155$	6
$155 \leq h < 160$	2

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L_1 , L_2

a. Determine the midpoint of the $130 \leq h < 135$ interval. 137.5

b. Calculate the approximate mean height of the students. 146.1   ≐ 146 cm

c. Determine the modal class interval.

$145 \leq h < 150$

---

5 Consider the frequency distribution of heights of elementary school students (cm) shown
below:

x   f
midpoint

132.5
137.5
142.5
147.5
152.5
157.5

height h (cm)	frequency
$130 \leq h < 135$	2
$135 \leq h < 140$	3
$140 \leq h < 145$	5
$145 \leq h < 150$	7
$150 \leq h < 155$	6
$155 \leq h < 160$	2
	25

$\bar{x} = \dfrac{\Sigma f \cdot x}{n}$

$= \dfrac{\Sigma f \cdot x}{\Sigma f}$ critical total

$= \dfrac{3652.5}{25}$

≐ 146.1

146 cm

a. Determine the midpoint of the $130 \leq h < 135$ interval. 132.5

b. Calculate the approximate mean height of the students.

c. Determine the modal class interval. $145 \leq h < 150$
because it occurs the most.

Draft #2

Be sure to include your IB registration number on Draft #2, next to your name.

i.e. ...

000440 - 0125

if you are not going to be signing up to take the IB math Studies exam, you do not need to continue with the project.

Let me know, please

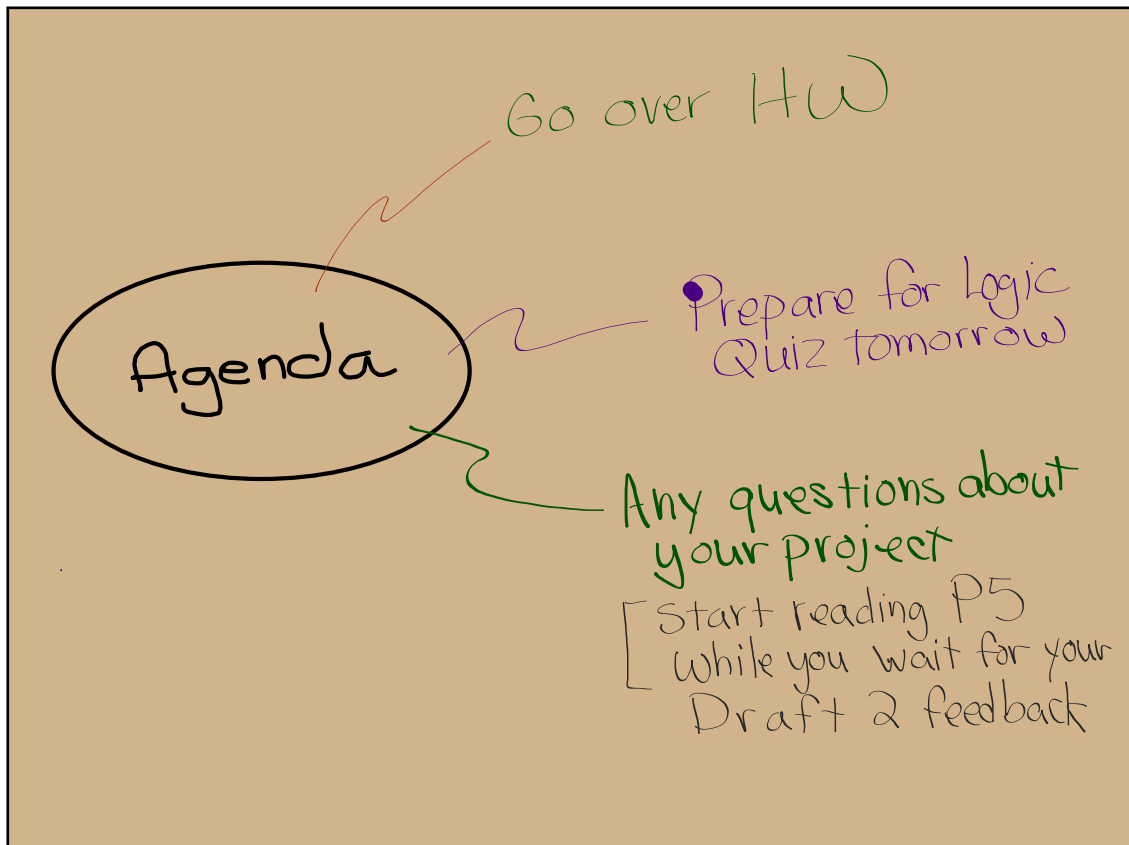For most of you all components of Draft 2 are due tomorrow.

[follow P4]

hardcopy to a folder
I will have

Also:
Turnitin.com
Submit by 11:45PM tomorrow night.

What does Mr. Cedarlund do with
your spreadsheet.....

Go over HW

Agenda

• Prepare for Logic
  Quiz tomorrow

Any questions about
your project

[Start reading P5
  while you wait for your
  Draft 2 feedback

$$a \lor b$$
or

$$c \land d$$

$$\neg(a \lor b)$$
or

$$\neg(c \land d)$$

$$\neg a \land \neg b$$

$$\neg c \lor \neg d$$

---

① *Logic, symbols and words*

Given the statements

p: It is raining
q: I am wearing my coat

(a) Write down, in words, the meaning of $q \Rightarrow \neg p$ If I am wearing my coat then it is not raining

(b) Complete the truth table

p	q	$\neg p$	$q \to \neg p$
T	T	f	f
T	F	f	
F	T		
F	F		

(c) Write in symbols, the contrapositive of $q \Rightarrow \neg p$

2. 3 propositions and truth tables

Considering the propositions, a, b and c and the compound statements

a: a person achieves grade 7 in Mathematics
b: a person achieves grade 7 in English
c: a person has above average IQ

(i) write the following statements in words

$c \Rightarrow (a \lor b)$ If a person has ↑IQ, then he achieves a 7 in math or a 7 in English

$\neg(a \lor b) \Rightarrow \neg c$ If a person doesn't achieve a 7 in math and doesn't achieve a 7 in english then he doesn't have ↑IQ

Construct a truth table to establish the truth values of both of these statements

(ii) Construct a truth table to establish the truth values of both of these statements

a	b	c	¬c	a ∨ b	¬(a ∨ b)	c → (a ∨ b)	¬(a ∨ b) → ¬c
T	T	T	f	T	f	T	T
T	T	f	T	T	f	T	T
T	f	T	f	T	f	T	T
T	f	f	T	T	f	T	T
f	T	T	f	T	f	T	T
f	T	f	T	T	f	T	T
f	f	T	f	f	T	f	f
f	f	f	T	f	T	T	T

3) Truth Tables and Contradiction

Show using truth tables that the following statement is a contradiction

$$\neg b \wedge \left[a \wedge (b \vee \neg a) \right]$$

a	b	¬a	¬b	(b ∨ ¬a)	[a ∧ (b ∨ ¬a)]	
T	T	f	f	T	f	f
T	f	f	T	f	f	f
f	f	T	f	f	f	f
f	f	T	T	T	f	f

all false so a contradiction

---

4)

Construct a truth table for $(\neg p \vee q) \Leftrightarrow r$ and determine if the statement is a tautology, a contradiction or neither.

p	q	r	¬p	¬p ∨ q	(¬p ∨ q) ⇔ r	
T	T	T	f	T	T	
T	T	f	f	T	f	brok prom
T	f	T	f	f	f	
T	f	f	f	f	T	
f	T	T	T	T	T	
f	T	f	T	T	f	brok prom
f	f	T	T	T	T	
f	f	f	T	T	f	brok prom

Neither

⑤ If I like Irish, than I like Logic, write the converse, inverse, and contrapositive

If I like Logic then I like Irish ← CONVERSE

If I don't like irish then I don't Like logic ← inverse

If I don't like logic, then I don't Like ~~Logic~~ ← Contraps.

Linking logical arguments is not included but there is a small video on arguments....

For the quiz tomorrow:

You can use the Formula Packet which has the basic truth tables listed

You will need to memorize the symbols and definitions of converse, inverse, and contrapositive.

$$\wedge \quad \vee \quad \underline{\vee} \quad \rightarrow \quad \longleftrightarrow$$

Know how to prove a tautology
or a logical contradiction.

Know how to prove two logical
statements are logically equivalent.

<u>Available</u>
- Logic Practice with Answers

B.B.

Logic Assignment 5

p: IHS student

q: IB student

r: non IHS student

$$p \land \lnot q$$