ALBERTA DISTANCE LEARNING CENTRE
Mathematics 30-3 Online
MAT3793
Unit B Assignment

Summary

	Marks Earned	Total Marks	Percent
Lesson 2 - Part B		25	
Lesson 3		14	

Teacher's Comments:

Teacher's Signature

NEW September 2018

Alberta Distance Learning Centre website:

http://www.adlc.ca

The Internet can be a valuable source of information. However, because publishing to the Internet is neither controlled nor censored, some content may be inaccurate or inappropriate. Students are encouraged to evaluate websites for validity and to consult multiple sources.

Mathematics 30-3 Online

Unit B Assignment

Measurement

Submission Instructions

You will submit your assignments online by uploading them to your course in Moodle. Once you log in to your course, you will find more detailed submission instructions provided by your teacher.

Go to this website to learn how to log in to Moodle:
http://quick.adlc.ca/login

If you have further questions about submitting your work, please contact your teacher.

Mathematics 30-3 Online
Unit B Assignment

Our Pledge to You:

Enrolling in this course is another step toward an Alberta High School Diploma. Everyone at Alberta Distance Learning Centre is committed to helping students achieve their educational goals. We welcome your contact in person or by phone, fax, e-mail, voice mail, or postal mail.

Advice:

Your achievement in this course is determined by your success in the assessments of each unit. Your responses to assignments indicate your understanding of outcomes established by Alberta Education.

- Before responding to the assigned questions, read all relevant directions for the Assignment and instruction in the course materials, including the appropriate Guide for Learning and any other resources provided.

- When you encounter difficulties, re-read the directions for the Assignment and review the relevant instruction in the Guide for Learning.

- If you require further clarification, contact your Alberta Distance Learning Centre teacher for assistance.

Notice:

You have one opportunity to submit each Assignment.

- Only under exceptional circumstances will your ADLC teacher re-assess your work. Therefore, apply significant effort to each Assignment.

- If your final exam mark is vastly different from your Quiz marks, your teacher may apply discretion in determining your course mark.

Format

You are encouraged to **handwrite** your written work.

If you type your work, be sure to follow these guidelines:

- Include your full name and student file number as a document header.
- Double-space your final copy.
- Staple your printed work to this Assignment.

ADLC Plagiarism Policy (ADLC Administrative Policy 60–1)

Plagiarism is the practice of representing someone else's work or ideas as one's own. It is an academically dishonest practice and is detrimental to a student's knowledge and skill development. ADLC takes a progressive approach to plagiarism to educate and correct the behaviour.

All incidents will be documented and are subject to the consequences outlined below:

First Incident	Second Incident	Third Incident
The student is given zero scores on any work suspected of being plagiarized and given the opportunity to resubmit original work.	The student is given zero scores on any work suspected of being plagiarized and is not given the opportunity to resubmit original work. A letter is sent by the principal to parents and school facilitators outlining this administrative practice and the consequences.	The student is removed from the course in which plagiarized work is suspected and notifications are put into the ADLC Student Information System, barring future registration to the course in question. A withdrawal letter is sent by the principal to parents and school facilitators.

Important

While removal from a course is limited to the course in which the third incident has occurred, the preceding steps can occur across different courses. A student who has been found plagiarizing in Course A and held to the First Incident consequences who then plagiarizes in Course B will move to the Second Incident consequences.

Any further occurrences after the Third Incident in any other courses will result in immediate removal from that course. Ongoing occurrences may result in removal from all courses and barring of registration with ADLC.

Sharing of ADLC Work (ADLC Administrative Policy 60–4)

Plagiarism is the practice of representing someone else's work or ideas as one's own. It is a dishonest practice and is damaging to a student's knowledge & skill development. Plagiarism is addressed in ADLC Administrative Policy 60-01.

The sharing of school work, especially after having been marked by ADLC, to students for the purposes of submitting plagiarized work (either paraphrasing or directly copying student work) is dishonest, and this sharing goes against the Alberta School Act's expectation of students to respect school rules and co-operate with how schools offer education to their students.

ADLC prefers to take a progressive approach to the sharing of work with other students, in order to educate and correct the behaviour.

If a student is currently enrolled in any ADLC course and found to be sharing school work, whether from their current course or another, to others, the following will happen:

First Incidence	Second Incidence
The student is informed that their work has been submitted as plagiarized work by another student; a warning is provided that further submissions of such work, from any course, will be grounds for removal from the current course(s).	The student is removed from all active ADLC courses.

If the student is not currently enrolled in any ADLC course and found to be sharing school work with others, they are informed that their work has been submitted as plagiarized work by another student and, as such, further registrations in any ADLC course will not be permitted. The incident will be recorded on the student's file.

Such actions do not limit ADLC to pursue other remedies (actions), either criminal or civil, for the distribution of its copyrighted materials.

Lesson 2 Assignment

Part B

Work slowly and carefully. If you are having difficulty, go back and review the appropriate *Lesson*.

For full marks, show all calculations, steps, and/or explain your answers.

Total: 25 marks.

6. A speedometer on a motorcycle measures the speed the vehicle is travelling in km/h, and the odometer measures the distance the vehicle travelled in km.
    Note: The value of "4" on the odometer is in the tenth place.

(2)   a. What is the precision and uncertainty of the speedometer?

precision: _____

uncertainty: _____

(2)   b. What is the precision and uncertainty of the odometer?

precision: _____

uncertainty: _____

(1)   c. Explain why the precision of the speedometer and odometer are different.

(1)   d. While travelling in a 80 km/h zone, the motorcycle's speedometer reads 85 km/h. An officer measures the speed, using an accurate speed gun, to be 93 km/h. How could the accuracy of the speedometer be improved?

(1)   e. Explain why it is important that the speedometer reading is accurate?

(1)   7. Medicine can be given to children using two types of measuring tools.

Measuring cup labelled with 2.5 mL, 5 mL, 7.5 mL, 10 mL, 12.5 mL, and 15 mL increments.

Syringe with 1 mL increments.

Yun requires 4 mL of cough syrup. What measuring tool should be used? Explain.

8. Ed and Joe both measure the height of a refrigerator three times to ensure that it fits in the kitchen under a cupboard. Their measurements are below.

Ed	180.2 cm, 180.1 cm, 179.9 cm
Joe	175.26 cm, 181.47 cm, 183.98 cm

(1)   a. Is Ed's or Joe's measuring tool more precise? Explain.

(1)   b. Which set of measurements is the most precise? Explain.

(1)   c. Which set of measurements are considered to be the most accurate? Explain.

9. Lucy measures the mass of her chocolate bar (true mass is $53.474\,074$ g) using different devices. For each measuring tool, state the measurement that should be recorded and the measurement uncertainty.

(2)   a. kitchen scale with a precision to the nearest 5 grams

_____ g $\pm$ _____ g
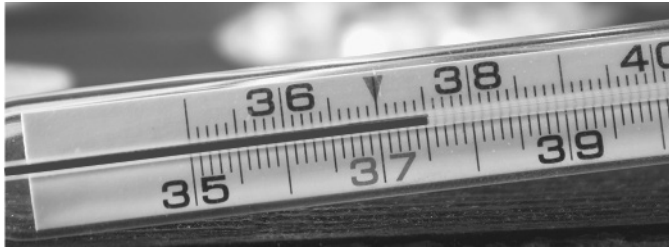
(2)   b. a digital scale with a precision of a tenth of a gram

_____ g $\pm$ _____ g

10.   State the measurements shown in the devices below.

⟨2⟩   a. a glass mercury thermometer that measures in $°C$

_____ $°C \pm$ _____ $°C$

⟨2⟩   b. a thermostat that measures in $°F$

_____ $°F \pm$ _____ $°F$

11.   When renovating her bathroom, Gretchen measured the length of the bathtub to be 5 feet and the length of the counter to be 3 feet.

⟨2⟩   a. Write the measurements for the bathtub and counter with their uncertainties.

bathtub: _____

sink: _____

⟨3⟩   b. If both the bathtub and sink are to be along one wall, what are the minimum and maximum lengths required for only the bathtub and counter.

measurement: _____   minimum length _____

uncertainty: _____   maximum length _____

length: _____

12. In the provincial high school track meet, the results for the top four male sprinters in the 100 m and their times are shown in the following table.

Top 4 Sprinters, 100 m	
Runner	**Time (seconds)**
Harv Hunt	11.21
Justin Ward	11.24
Kyle Zinski	11.29
Lester Frank	11.40

(1)   Based on these results, explain why the precision of the stopwatch must be at least 0.01 of a second.

![list icon] **Lesson 3 Assignment**

Tolerance

Work slowly and carefully. If you are having difficulty, go back and review the appropriate *Lesson*.

For full marks, show all calculations, steps, and/or explain your answers.

Total: 14 marks.

1　_____　1.　Nominal value is the

    A.　maximum allowed value
    B.　minimum allowed value
    C.　ideal value
    D.　exact measured value

1　_____　2.　The tolerance of a measurement of $12.52 \text{ in} \pm 0.3 \text{ in}$ is

    A.　0.1 in
    B.　0.15 in
    C.　0.3 in
    D.　0.6 in

1　_____　3.　The maximum and minimum allowable values for the measurement of $8.6 \text{ ft} \pm 0.2 \text{ ft}$ are

    A.　maximum value: 8.8 ft
       minimum value: 8.4 ft
    B.　maximum value: 8.7 ft
       minimum value: 8.5 ft
    C.　maximum value: 9.0 ft
       minimum value: 8.2 ft
    D.　maximum value: 8.65 ft
       minimum value: 8.55 ft

4   4.   The tolerance of a calliper is 0.02 mm.

Write the measurement in two different ways.

(1)   5.   The mass of a *Lego®* block is $3.3 \text{ g} \pm 0.1 \text{ g}$.
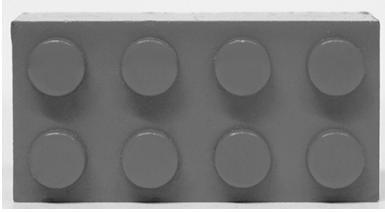
What are the minimum and maximum masses of the block?

6. A blood glucose meter allows diabetics to check their blood sugar level at home. This blood glucose meter has a tolerance range of ± 1.5 mmol/L. Five blood glucose meters are tested for accuracy with a blood sample that has a glucose (sugar) concentration of 10 mmol/L.

Machine	Glucose Concentration (mmol/L)
1	12.0
2	9.5
3	8.6
4	8.3
5	10.2

① a. Determine the maximum and minimum acceptable blood glucose concentrations using the blood glucose meter.

① b. Which machines fall within the acceptable range?

② c. Which machines do not fall within the acceptable range?

① d. Why are blood glucose meters used to check diabetics' blood sugar levels at home?

① e. Medical clinics have instruments that measure blood glucose levels with a tolerance of 0.2 mmol/L. Why are these instruments not used by diabetics at home?

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