Grade 12
Essential Mathematics
Achievement Test

Marking Guide

January 2026

Manitoba

Grade 12 Essential Mathematics Achievement Test:
Marking Guide (January 2026)

This resource is available in print and electronic formats.

ISBN: 978-0-7711-6720-1 (print)

ISBN: 978-0-7711-6751-5 (pdf)

Manitoba Education and Early Childhood Learning
Winnipeg, Manitoba, Canada

Disponible en français.

Available in alternate formats upon request.

Contents

General Marking Instructions

The *Grade 12 Essential Mathematics: Marking Guide (January 2026)* is based on *Grades 9 to 12 Mathematics: Manitoba Curriculum Framework of Outcomes* (2014).

Please ensure that

- the student booklet number matches the number on the *Scoring Sheet*
- **only a pencil is used to complete the *Scoring Sheet***
- the final test mark is recorded on the *Scoring Sheet*
- the *Scoring Sheet* is complete and a copy has been made for school records

Please make no marks in the student test booklets. If the booklets have marks in them, the marks need to be removed by departmental staff prior to sample marking should the booklet be selected.

Once marking is completed, please forward the *Scoring Sheets* to Manitoba Education and Early Childhood Learning using the envelope provided. (For more information, see the administration manual.)

Marking

The recommended procedure for scoring student responses is as follows:

1. Read the *Marking Guide*.
2. Study the student samples provided and the rationales for the allotted marks.
3. Determine the mark for the student's response by comparing its features with the *Marking Guide* descriptions. The descriptions and samples only typify a student's response to a given question; an exact match is not anticipated.

The marks allocated to questions are based on the concepts associated with the learning outcomes in the curriculum. For each question, shade in the circle on the *Scoring Sheet* that represents the mark awarded based on the concepts. A total of these marks will provide the preliminary mark.

Errors

Marks are deducted if conceptual or communication errors are committed.

Conceptual Errors

As a guiding principle, students should only be penalized once for each error committed in the context of a test question. For example, students may choose an inappropriate strategy for a question, but carry it through correctly and arrive at an incorrect answer. In such cases, students should be penalized for having selected an inappropriate strategy for the task at hand, but should be given credit for having arrived at an answer consistent with their choice of strategy.

Each time a student makes one of the following errors, a 0.5 mark deduction will apply:

- arithmetic error
- procedural error
- terminology error in explanation
- lack of clarity in written responses

Communication Errors

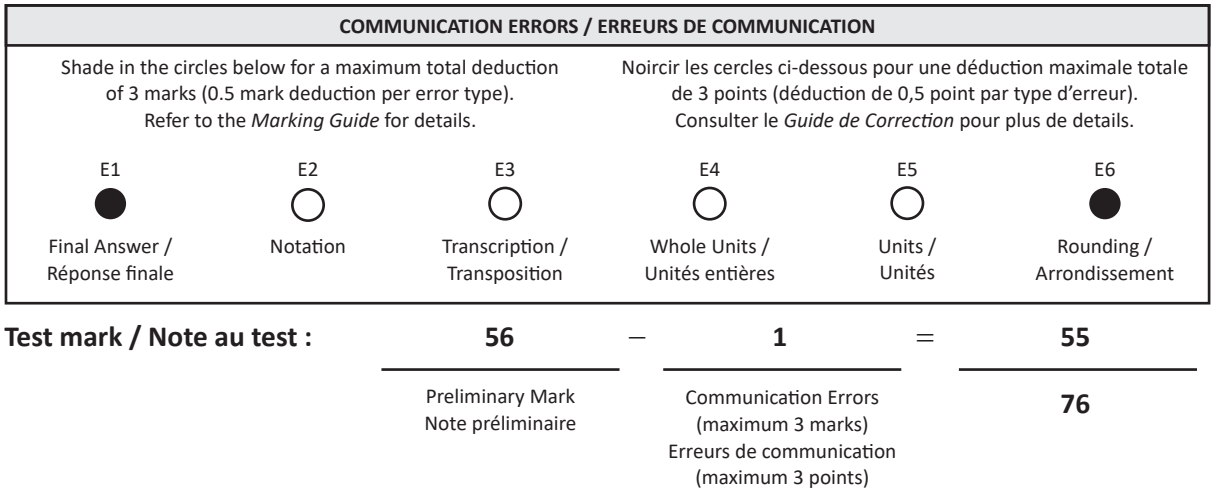
Errors not conceptually related to the learning outcomes associated with the question are called "Communication Errors" (see Appendix C). These errors result in a 0.5 mark deduction. Each type of error can only be deducted once per test and is tracked in a separate section on the *Scoring Sheet*.

When a given response includes multiple types of communication errors, deductions are indicated in the order in which the errors occur in the response. No communication errors are recorded for work that has not been awarded marks. The total deduction may not exceed the marks awarded.

The student's final mark is determined by subtracting the communication errors from the preliminary mark.

Example:

A student has a preliminary mark of 56. The student committed two E1 errors (0.5 mark deduction) and three E6 errors (0.5 mark deduction).



Marking Guidelines

Follow-through errors

Generally, a student will not be penalized more than once for the same error. A final answer will be deemed to be correct if it follows correctly from an incorrect intermediate step where marks were already lost. In multiple-part questions, if an error was made in Part A, but subsequent parts were completed appropriately based on the incorrect information in Part A, full marks will be awarded in subsequent parts.

Marks for follow-through errors will not be awarded if

- the answer is wrong and there are no part-mark increments available
- the error is conceptual in nature (e.g., the student used simply the cosine ratio when the question called for the use of the cosine law)

Additional-information errors

Students can occasionally provide too much information in their answers. When additional information is provided, it must be clearly indicated as such. For example, if a student is asked to calculate a probability, then full marks are awarded for a correct answer even if the odds are also present—provided this additional information is labelled "odds."

Irregularities in Provincial Tests

During the administration of provincial tests, supervising teachers may encounter irregularities. Markers may also encounter irregularities during local marking sessions. The appendix provides examples of such irregularities as well as procedures to follow to report irregularities.

If a *Scoring Sheet* is marked with "0" only (e.g., student was present but did not attempt any questions) please document this on the *Irregular Test Booklet Report*.

Assistance

If any issue arises that cannot be resolved locally during marking, please call Manitoba Education and Early Childhood Learning at the earliest opportunity to advise us of the situation and seek assistance if necessary.

You must contact the person responsible for this project before making any modifications to the marking keys.

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Home Finance

Question 1 E6.H.1 1 mark

Identify which of the following is not a closing cost:

A) Property tax adjustment

B) Landscaping

C) Lawyer's fees

D) Land transfer tax

Answer: B

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Question 2 E6.H.1 3 marks

A) Calculate the annual home insurance for the following situation:

- Value of home: $295 000
- Area 2
- Standard policy
- $500 deductible

Use the *Manitoba Homeowner's Insurance Rates* table on the following page. (2 marks)

Show your work.

Answer:

First $200 000 $= \$519$ ← 0.5 mark for first $200 000 insurance premium

$$\text{Next } \$95\,000 = \frac{95\,000}{1000} \times 2.75$$ ← 0.5 mark for the chart amount ← 0.5 mark for multiplication

$$= \$261.25$$

$$\text{Total} = 519 + 261.25$$ ← 0.5 mark for addition

$$= \$780.25$$

Note to marker: Award follow-through error if a student uses the wrong type of insurance or wrong area.

B) Insurance for the same home in Area 4 costs $1414.40.

Justify why a home in Area 4 has a different insurance cost. (1 mark)

Answer:

The insurance in Area 4 is $634.15 more than Area 2 because the home is further away from emergency services (unprotected).

Exemplar 1

3 marks

A) 200 000 = $519

$\frac{95\,000}{1000} = 95 \times 2.75 = \$261.25$

$519 + 261.25 = \boxed{\$780.25}$

B) It is more expensive because it is outside the city and further away from a method of putting out a fire.

Mark: 3 out of 3

Rationale: Award full marks
E2 (inappropriate use of equal sign) in Part A

Exemplar 2

3 mark

A) 295 000

200 000 — 519

95 000 — 2.75

$\frac{(95\,000)(2.75)}{1000} = \$261.25$

B) Different area, Farther out the city

Mark: 2 out of 3

Rationale: 0.5 mark for first $200 000 in Part A
0.5 mark for multiplication in Part A
0.5 mark for chart amount in Part A
1 mark for correct answer in Part B
0.5 mark deduction for lack of clarity (no mention of being further away from emergency services)

Exemplar 3

3 marks

A) $519+261.25 = $780.25 - 500 = $280.25

B) Becuse they may be far from a fire station

Mark: 1.5 out of 3

Rationale: Award full marks
1 mark deduction for concept error (subtracting deductible)
Incorrect answer in Part B
0.5 mark deduction for lack of clarity (why is being far from the fire station a problem?)
E2 (inappropriate use of equal sign) in Part A

Exemplar 4

3 marks

A) $519

95 x 2.75 = $261.25

519 + 261.25 + 500 $1 280.25

B) Because if something where to happen it would take longer to get out to your house

Mark: 1.5 out of 3

Rationale: Award full marks
1 mark deduction for concept error (adding deductible)
0.5 mark deduction for lack of clarity (who is going out to the house?) in Part B

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Question 3 E6.H.1 3.5 marks

Deepak owns a condo worth $275 000. The portioned percent is 45%. The municipal tax rate is 15.758 mills.

A) Calculate Deepak's municipal tax. (2 marks)

Show your work.

Answer:

$$\text{Portioned assessment} = 275\,000 \times 0.45 \quad \leftarrow \text{1 mark for calculating portioned assessment}$$
$$= \$123\,750$$

$$\text{Municipal tax} = \frac{123\,750}{1000} \times 15.758 \quad \leftarrow \text{1 mark for calculating municipal tax}$$
$$= \$1950.05$$

B) Deepak's condo is on a lot with 50 foot frontage. There is a local improvement tax for sidewalk upgrades of $8.50/ft.

Calculate the local improvement tax. (1 mark)

Answer:

8.50×50

$= \$425$ ← 1 mark

C) Calculate Deepak's total property tax before deductions if he also pays $1445 in education taxes. (0.5 mark)

Answer:

$1950.05 + 1445 + 425$

$= \$3820.05$ ← 0.5 mark

Exemplar 1

3.5 marks

A) $(275'000)(0.45) = 123'750$

$\frac{(123'750)(15.758)}{1000} = 1'950.0525$

B) Local improvement $= (50)(8.50) = 425$

C) total $= 1'950.0525 + 425 + 1'445 = 3'820.0525$

Mark: 3.5 out of 3.5

Rationale: Award full marks
E5 (missing units)
E6 (rounding: monetary values are not expressed to two decimals)

Exemplar 2

3.5 marks

A) $PT = (275000)(0.45) = 123750$

municiple tax $= \frac{(123750)(15.758)}{1000} = \$1949.92$

B) Local improvement $= (50)(8.50) = 425$

C) total property tax $= 1949.92 + 1445 + 425 = \$2064.92$

Mark: 3 out of 3.5

Rationale: Award full marks in Part A
0.5 mark deduction for arithmetic error in Part A
Award full marks in Part B
Award full marks in Part C (follow-through error)
E5 (missing units) in Part B

Exemplar 3

3.5 marks

A) $0.45 \times \frac{15.758}{1000} = \$0.71$

B) $8.50 \times 50 = \$425$

C)
$$\begin{array}{r} 0.71 \\ 425 \\ +1445 \\ \hline \$1870.71 \end{array}$$

Mark: 1.5 out of 3.5

Rationale: Incorrect answer in Part A
Award full marks in Part B
Award full marks in Part C (follow-through error)

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Question 4 E6.H.1 1.5 marks

Oleksii's mortgage amount of $328 000 has the following amortization schedule.

Calculate the missing values in the schedule for March.

Month	Monthly Mortgage Payment	Interest Payment	Principal Payment	Unpaid Balance
February	$2348.48	$1981.67	$366.81	$327 633.19
March	$2348.48	$1979.45	$369.03	$327 264.16

Answer:

Monthly mortgage payment $= \$2348.48$ ← 0.5 mark for monthly payment

Principal payment $= \$2348.48 - \$1979.45$

$= \$369.03$ ← 0.5 mark for principal payment

Unpaid balance $= \$327\,633.19 - \$369.03$

$= \$327\,264.16$ ← 0.5 mark for unpaid balance

Note to marker: No work needs to be shown.

Exemplar 1

1.5 marks

Mortgage payment = $2348.48

principal payment = 2348.48 − 1979.45 = $369.03

unpaid balance = 327633.19 − 2348.48 = $325284.71

Mark: 1 out of 1.5

Rationale: 0.5 mark for monthly payment
0.5 mark for principal payment

Exemplar 2

1.5 marks

P = 2348.48 − 1979.54 = $368.94

UB = 327 633.19 − 368.94

= $327 264.25

Mark: 1.5 out of 1.5

Rationale: Award full marks (follow-through error)
E3 (transposition error)

Exemplar 3

1.5 marks

P = $2348.48 − $1981.67 = $366.81

UB = $327 633.19 − $366.81

= $327 266.38

Mark: 1 out of 1.5

Rationale: 0.5 mark for monthly payment
0.5 mark for unpaid balance (follow-through error)

Question 5 E6.H.1 2 marks

The land transfer tax when purchasing a property is calculated as follows:

Land Transfer Tax Table		
Value of Property	**Rate (%)**	**Tax amount ($)**
On the first $30 000	0%	$0
On the next $60 000 (i.e., $30 001 to $90 000)	0.5%	$300
On the next $60 000 (i.e., $90 001 to $150 000)	1.0%	$600
On the next $50 000 (i.e., $150 001 to $200 000)	1.5%	$750
On amounts in excess of $200 000	2.0%	$4200
	Total	$5850

Shorai is purchasing a property valued at $410 000.

Calculate the total land transfer tax that Shorai has to pay.

Show your work.

Answer:

Excess amount $= 410\,000 - 200\,000$ ← 0.5 mark for subtraction

$= \$210\,000$

Tax on amount in excess of $200 000 $= 210\,000 \times 0.02$ ← 1 mark for calculating tax on excess

$= \$4200$

Total land transfer tax $= 1650 + 4200$ ← 0.5 mark for addition

$= \$5850$

Exemplar 1

2 marks

410 000 − 200 000 = 210000 × 0.02 = 4200

0
300
600
750
4200
$5850

Mark: 2 out of 2

Rationale: Award full marks
E2 (inappropriate use of equal sign)

Exemplar 2

2 marks

410 000 × 0.02 = 8200

Mark: 1 out of 2

Rationale: 1 mark for calculating tax on excess (follow-through error)
E5 (missing units)

Question 6 E6.H.1 2.5 marks

Shayd is looking to buy a house with annual property taxes of $3036 and monthly heating costs of $218. Shayd's gross monthly income is $6800 and she anticipates a monthly mortgage payment of $1600.

Calculate Shayd's Gross Debt Service Ratio.

Show your work.

Answer:

$$\text{Monthly property taxes} = \frac{3036}{12} \quad \leftarrow \text{0.5 mark for calculating monthly property taxes}$$

$$= \$253$$

$$\text{GDSR} = \frac{(1600 + 253 + 218)}{6800} \quad \leftarrow \text{1 mark for addition of monthly costs}$$

$$= \frac{2071}{6800} \quad \leftarrow \text{1 mark for calculating GDSR}$$

$$= 0.3045588...$$

$$= 30.46\%$$

Exemplar 1

2.5 marks

$$\frac{3036 + 218 + 1600}{6800} \times 100 = 71.38$$

Mark: 2 out of 2.5

Rationale: 1 mark for addition of monthly costs
1 mark for calculating GDSR
E5 (missing units)

Exemplar 2

2.5 marks

$$GDSR = \frac{\frac{1600}{12} + \frac{3036}{12} + \frac{218}{12}}{\frac{6800}{12}}$$

$$= \frac{133.33 + 253 + 18.17}{566.67}$$

$$= \frac{404.50}{566.67}$$

$$= 0.71$$

Mark: 1.5 out of 2.5

Rationale: Award full marks
1 mark deduction for concept error (divided all values by 12)

Exemplar 3

2.5 marks

$\frac{3036}{12} = 253$

$GDSR = \frac{1600 + 253 + 218}{6800}$

$= 1853.03$

$= 0.18$

Mark: 1.5 out of 2.5

Rationale: Award full marks
0.5 mark deduction for procedural error (did not follow order of operations)
0.5 mark deduction for procedural error (divided by 10 000)

Exemplar 4

2.5 marks

$GDSR = \frac{1600 + 253 + 218}{6800} \times 100$

$= 30\%$

Mark: 2.5 out of 2.5

Rationale: Award full marks
E6 (rounding)

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Probability

Question 7 E6.P.1 1 mark

The probability of a person's cell phone ringing in a movie theatre is 6%. On Saturday, 580 people attended movies at this theatre.

Determine the number of times a phone rang during a movie on Saturday.

Show your work.

Answer:

0.06×580 ← 0.5 mark for process

$= 34.8$

$=$ 34 or 35 times ← 0.5 mark for number of times

Exemplar 1

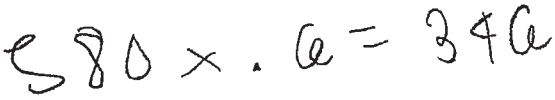
1 mark

Mark: 1 out of 1

Rationale: Award full marks
E4 (whole units)

Exemplar 2

1 mark



Mark: 0.5 out of 1

Rationale: Award full marks
0.5 mark deduction for procedural error

Question 8 E6.P.1 1 mark

Dakota is planning to go ice fishing. The odds in favour of a storm occuring are 2:9.

Calculate the probability of a storm occuring the day Dakota goes ice fishing.

Answer:

Probability $= \frac{2}{11}$ or 0.18 or 18.18%

Exemplar 1

1 mark

$\frac{2}{9}$

Mark: 0 out of 1

Exemplar 2

1 mark

$2/11 = 18\%$

Mark: 1 out of 1

Rationale: Award full marks
E6 (rounding)

Question 9 E6.P.1 1 mark

The Tigers have made soccer provincials in five of the last nine years.

State, as a percentage, the probability that they will play in provincials this year.

Answer:

$\frac{5}{9} \times 100$

$= 55.56\%$ $\leftarrow$ 1 mark

Exemplar 1

1 mark

$\frac{5}{9} \times 100 = 55.55\%$

Mark: 1 out of 1

Rationale: Award full marks
E6 (rounding)

Exemplar 2

1 mark

$= \frac{5}{9}$

Mark: 0 out of 1

Exemplar 3

1 mark

$= \frac{5}{9} \times 100$

$= 56\%$

Mark: 1 out of 1

Rationale: Award full marks
E6 (rounding)

Question 10 E6.P.1 1 mark

The probability of being selected to appear on a television commercial is 5%.

State the odds against being selected for the television commercial.

Answer:

95:5 or 19:1

Note to marker: Accept equivalent representations.

Exemplar 1

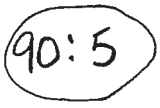
1 mark

odds against = 5:95

Mark: 0 out of 1

Exemplar 2

1 mark



Mark: 0 out of 1

Question 11 E6.P.1 1 mark

Tanisha stated that 1.15 is the probability of Canada winning an Olympic medal.

Explain why Tanisha is incorrect.

Sample answer:

Probability must be a value ranging from 0 to 1.

Exemplar 1

1 mark

Because 1.15 converted to percentage would be 115%. Which is impossible.

Mark: 1 out of 1

Exemplar 2

1 mark

she is incorrect because that's not the right probability

Mark: 0 out of 1

Exemplar 3

1 mark

it cant be a decimal

Mark: 0 out of 1

Question 12 E6.P.1 2 marks

Ten tokens numbered 1 to 10 are placed in a box. Charleigh randomly selects one token, records her results, and then returns it to the box. She does this five times.

The results are:

A) State the experimental probability of Charleigh selecting an 8. (1 mark)

Answer:

$\frac{1}{5}$ or 0.2 or 20% or one out of five

B) State the theoretical probability of Charleigh selecting a 2. (1 mark)

Answer:

$\frac{1}{10}$ or 0.1 or 10% or one out of ten

Exemplar 1

2 marks

A) $\frac{1}{10}$

B) $\frac{(}{10}$

Mark: 1 out of 2

Rationale: Incorrect answer in Part A
Award full marks in Part B

Question 13 E6.P.1 3 marks

A fundraiser is selling tickets to win a $795 television. A ticket costs $99. The probability of winning the television is 8%.

A) Calculate the expected value of winning the television. (2 marks)

Show your work.

Answer:

$EV = (0.08)(696) + (0.92)(-99)$ ← 0.5 mark for calculating gain ← 0.5 mark for calculating loss

$= 55.68 + (-91.08)$ ← 1 mark for addition

$= -\$35.40$

OR

Answer:

$EV = (0.08)(795) - 99$ ← 1 mark for multiplication

$= 63.60 - 99$ ← 1 mark for subtraction

$= -\$35.40$

B) Justify whether you should purchase a ticket, based on your answer from part A. (1 mark)

Answer:

No, I should not purchase a ticket because the expected value is negative.

Exemplar 1

3 marks

A)

Win	lose
$696	$99
0.92	0.08

$0.92(696) - 99(0.08)$

$640.32 - 7.92$

$= \$632.40$

B) I should purchase a ticket because the expected value is above zero.

Mark: 2 out of 3

Rationale: 1 mark for addition in Part A
1 mark for justification in Part B (follow-through error)

Exemplar 2

3 marks

A) $EV = (0.07)(795) - (0.92)(99) = |-35.43|$

$55.65 - 91.08$

B) I wouldn't, as my expected value is calculated as a negative. This means its not worth buying the ticket.

Mark: 2.5 out of 3

Rationale: 0.5 mark for calculating loss in Part A
1 mark for addition in Part A
1 mark for justification in Part B
E5 (missing units) in Part A

Exemplar 3

3 marks

A) $EV = \frac{2}{25}(795) - 99$

$EV = -35.4$

B) No it is not worth it the EV is negative.

Mark: 3 out of 3

Rationale: Award full marks
E5 (missing units) in Part A
E6 (rounding) in Part A

Exemplar 4

3 marks

A) $EV = (0.08)(\$696) - (0.92)(\$99) = \$35.40$

B) Yes, even if its a very low chance of winning the TV there is still a chance.

Mark: 1.5 out of 3

Rationale: Award full marks in Part A
0.5 mark deduction for arithmetic error in Part A
Incorrect answer in Part B

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Vehicle Finance

Question 14 E5.V.1 2 marks

Yulia is deciding whether to lease or buy a new truck.

Describe one advantage of each.

Sample answers:

Lease	Buy
• Yulia has the option of purchasing it at the end of the lease. • Yulia can return the truck after the lease and get another new vehicle. • Yulia can return the truck after the lease and not have to worry about the responsibility of selling the vehicle if she no longer wants it.	• Yulia owns the vehicle at the end of financing. • Yulia can eliminate the risk and worry of additional expenses such as excess mileage and repair fees. • Yulia can consider the vehicle an asset.
1 mark for an advantage for leasing	1 mark for an advantage for buying

Exemplar 1

2 marks

Lease	Buy
cheaper monthly	own it at end

Mark: 2 out of 2

Exemplar 2

2 marks

Lease	Buy
– she is not locked in with this vehicle and can choose to sell it	– Car becomes an asset

Mark: 1 out of 2

Rationale: 1 mark for advantage of buying

Exemplar 3

2 marks

Lease	Buy
when you lease a vehicle you have a set limit of km you can drive.	Free range to drive as many Kilometers as she wants

Mark: 1 out of 2

Rationale: 1 mark for advantage of buying

Exemplar 4

2 marks

Lease	Buy
- don't have to pay for the whole vehicle.	- Don't have to worry about using to many km.

Mark: 2 out of 2

Question 15 E5.V.1 1 mark

Identify the reason why a car must undergo a safety inspection when purchased privately.

A) To have it insured by Manitoba Public Insurance

B) To ensure that it is not a stolen car

C) To make sure there are no other owners of the car

D) To avoid paying for a lien search

Answer: A

Question 16 E5.V.1 1.5 marks

An SUV has a fuel economy of 14 L/100 km in the city and 10.5 L/100 km on the highway.

A person drives this SUV for one month. They travelled 715 km in the city and 1474 km on the highway.

Calculate the total amount of fuel used.

Show your work.

Answer:

$$\text{Litres used in city} = \frac{14\text{ L}}{100} \times 715$$

$$= 100.1\text{ L} \quad \leftarrow \text{0.5 mark for litres used in the city}$$

$$\text{Litres used on highway} = \frac{10.5\text{ L}}{100} \times 1474$$

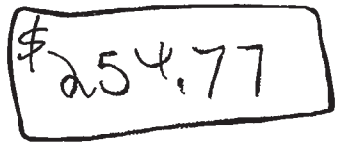
$$= 154.77\text{ L} \quad \leftarrow \text{0.5 mark for litres used on the highway}$$

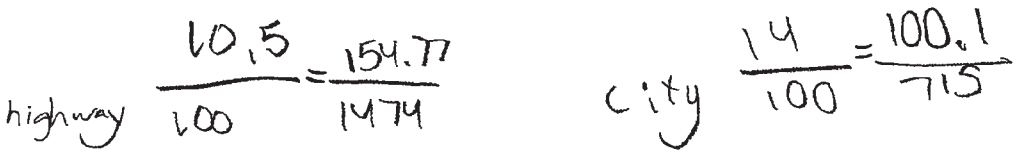
$$\text{Total fuel used} = 100.1 + 154.77 \quad \leftarrow \text{0.5 mark for addition}$$

$$= 254.87\text{ L}$$

Exemplar 1

1.5 marks



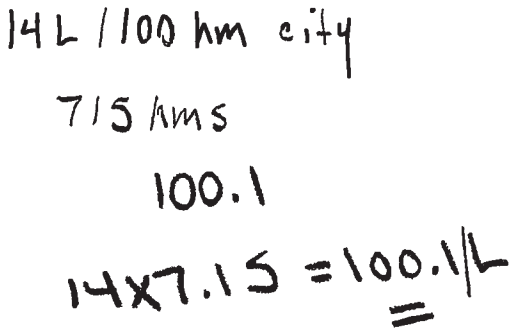


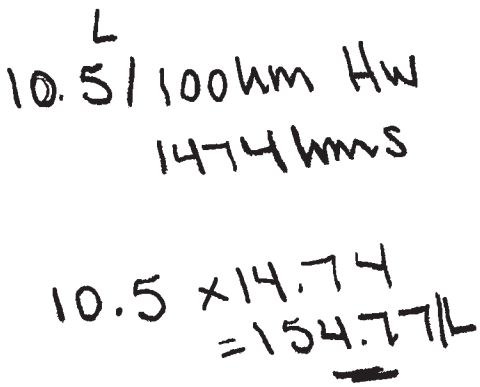
Mark: 1 out of 1.5

Rationale: Award full marks
0.5 mark deduction for arithmetic error
E5 (incorrect units)

Exemplar 2

1.5 marks





Mark: 1 out of 1.5

Rationale: 0.5 mark for litres used in the city
0.5 mark for litres used on the highway
E5 (incorrect units)

Question 17 E5.V.1 2 marks

State two optional features that can be added to the base price when purchasing a new vehicle.

Sample answers:

- sun roof
- command start
- heated seats
- chrome package
- keyless entry/ignition
- rearview camera
- leather seats

Exemplar 1

2 marks

1. Warenty

2. Custom add on Ex: Leather Seats.

Mark: 1.5 out of 2

Rationale: Award full marks
0.5 mark deduction for lack of clarity (what kind of warranty?)

Exemplar 2

2 marks

1. Leather Seats

2. new Tires

Mark: 1.5 out of 2

Rationale: Award full marks
0.5 mark deduction for lack of clarity (what kind of tires?)

Question 18 E5.V.1 2 marks

Amir wants to buy a new vehicle and he has two options.

Justify which vehicle Amir should choose, based on the values of the vehicles after one year.

Show your work.

	Vehicle 1	Vehicle 2
Purchase price (taxes included)	$31 490	$34 350
Depreciation rate (year 1)	15%	20%

Answer:

Value of vehicle 1 $= 31\,490 \times 0.85$

$= \$26\,766.50$ ← 0.5 mark for value of vehicle 1

Value of vehicle 2 $= 34\,350 \times 0.80$

$= \$27\,480$ ← 0.5 mark for value of vehicle 2

Amir should choose vehicle 2, because it will have a higher value after year 1. ← 1 mark for justification

OR

Answer:

Depreciation of vehicle 1 $= 31\,490 \times 0.15$

$= \$4723.50$

Value of vehicle 1 $= 31\,490 - 4723.50$

$= \$26\,766.50$ ← 0.5 mark for value of vehicle 1

Depreciation of vehicle 2 $= 34\,350 \times 0.20$

$= \$6870$

Value of vehicle 2 $= 34\,350 - 6870$

$= \$27\,480$ ← 0.5 mark for value of vehicle 2

Amir should choose vehicle 2, because it will have a higher value after year 1. ← 1 mark for justification

Exemplar 1

2 marks

A: Amt dep = (31490)(0.15) = $4723.50

New Value = 31490 − 4723.5 = $26766.50

B: Amt dep = (34350)(0.2) = $6870

New Value = 34350 − 6870 = $27480

Amir should pick Vehicle A for its lower depriciation in this time

Mark: 1 out of 2

Rationale: 0.5 mark for value of vehicle 1
0.5 mark for value of vehicle 2

Exemplar 2

2 marks

V1: $4723.50 V2: $6870

34350 − 6870 = 27480

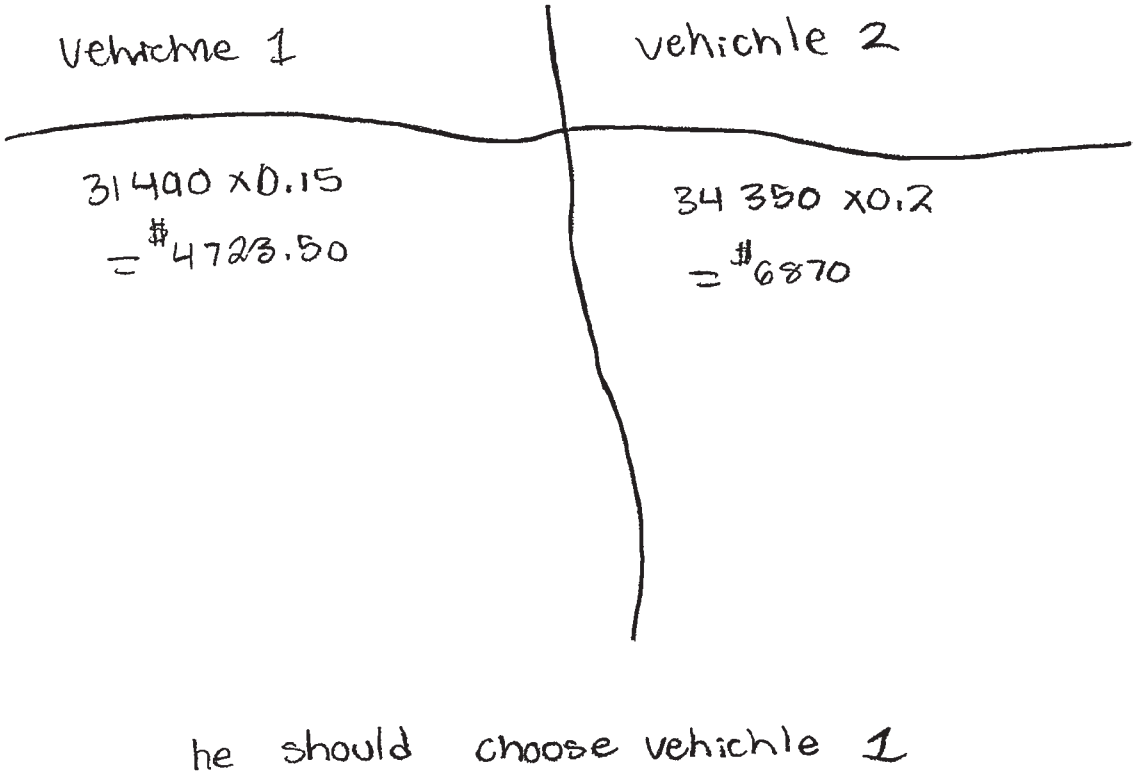
31490 − 4723.50
=
26766.50

Should choose vehicle 2

Mark: 2 out of 2

Exemplar 3

2 marks

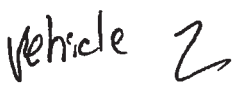


Mark: 1 out of 2

Rationale: 1 mark for justification (student selected the vehicle with the lesser depreciation)

Exemplar 4

2 marks



Mark: 0 out of 2

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Question 19 E5.V.1 4 marks

Fred buys a used truck from a dealership. The price of the vehicle is $37 750 plus taxes. He agrees to trade-in his old vehicle for $6650.

A) Calculate the total cost, plus taxes, that Fred will pay to purchase the vehicle. (2 marks)

Show your work.

Answer:

$$\text{Total cost before taxes} = 37\,750 - 6650 \quad \leftarrow \text{1 mark for subtraction}$$
$$= \$31\,100$$

$$\text{Total cost after taxes} = 31\,100 \times 1.12 \quad \leftarrow \text{1 mark for calculating total cost plus taxes}$$
$$= \$34\,832$$

B) Fred saved $6000 dollars for a down payment. He will take out a loan for the rest of the amount at an interest rate of 6.5% over 4 years.

Calculate Fred's monthly payment. (2 marks)

Show your work.

Answer:

$$\text{Loan amount} = 34\,832 - 6000 \quad \leftarrow \text{1 mark for subtraction}$$
$$= \$28\,832$$

$$\text{Monthly payment} = 23.71 \times \frac{28\,832}{1000} \quad \leftarrow \text{0.5 mark for chart amount}$$
$$\leftarrow \text{0.5 mark for multiplication}$$
$$= \$683.61$$

Exemplar 1

4 marks

A) vehicle cost: $37750

37750 × .07 = $2642.50

3750 × .05 = $187.50

+

$ 42280.00

− 6650

$35,630.00

B) 35630 − 6000 = $29630

$$\frac{(\text{short vehicle} \times \text{Principal})}{1000}$$

$$\frac{(23.71 \times 29630)}{1000}$$

$$= \frac{702527.30}{1000} = \$702.53$$

Mark: 3 out of 4

Rationale: Award full marks in Part A
1 mark deduction for concept error (trade-in after tax) in Part A
Award full marks in Part B (follow-through error)

Exemplar 2

4 marks

A) 37750 − 6650 × 1.12 = $34832

B) $829.89

Mark: 2 out of 4

Rationale: Award full marks in Part A
Incorrect answer in Part B
E2 (notation error)

Exemplar 3

4 marks

A) $37750 - 6650 = 31090$

$31090 \times 1.12 = \$34820.80$

B)

Monthly Vehicle Loan Payments per $1000 borrowed					
Interest Rate (%)	Years to Repay Loan				
	1	2	3	4	5
6.00	86.07	44.32	30.42	23.49	19.33
6.25	86.18	44.43	30.54	23.60	19.45
6.50	86.30	44.55	30.65	23.71	19.57
6.75	86.41	44.66	30.76	23.83	19.68
7.00	86.53	44.77	30.88	23.95	19.80

Mark: 2 out of 4

Rationale: Award full marks in Part A
0.5 mark deduction for arithmetic error in Part A
0.5 mark for chart amount

Question 20 E5.V.1 1 mark

Identify what residual value refers to when leasing a vehicle.

A) The amount financed for the lease

B) The amount of money put down on the vehicle

C) The charge for exceeding the kilometre usage

D) The value of the vehicle at the end of the lease

Answer: D

Question 21 E5.V.1 2 marks

A mechanic repairs the transmission on a vehicle. He starts working at 8:30 a.m. and finishes at 4:00 p.m. He takes a one-hour unpaid break for lunch. The transmission costs $950 to repair and the labour cost is $123.50/hour.

Calculate the total cost for the repair, plus taxes.

Show your work.

Answer:

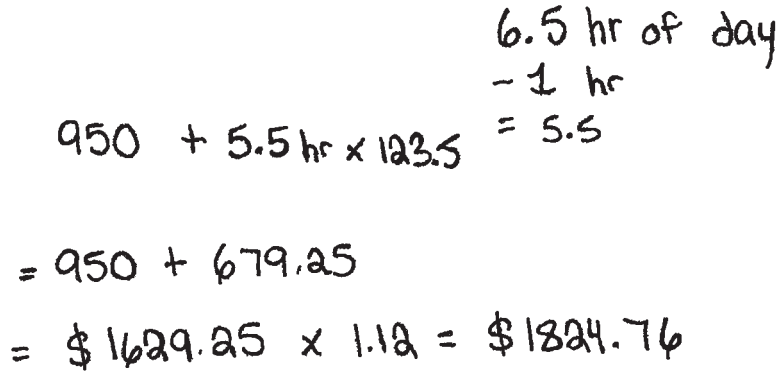
$$\text{Labour cost} = 6.5 \times 123.50 \quad \leftarrow \text{0.5 mark for multiplication}$$
$$= \$802.75$$

$$\text{Subtotal} = 802.75 + 950 \quad \leftarrow \text{0.5 mark for addition}$$
$$= \$1752.75$$

$$\text{Total cost} = 1752.75 \times 1.12 \quad \leftarrow \text{1 mark for calculating total cost plus taxes}$$
$$= \$1963.08$$

Exemplar 1

2 marks

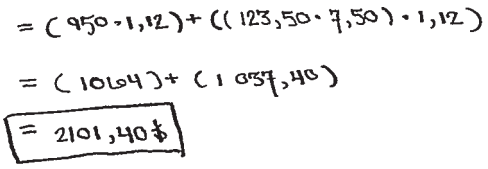


Mark: 1.5 out of 2

Rationale: 0.5 mark for addition (follow-through error)
1 mark for calculating total cost plus taxes

Exemplar 2

2 marks

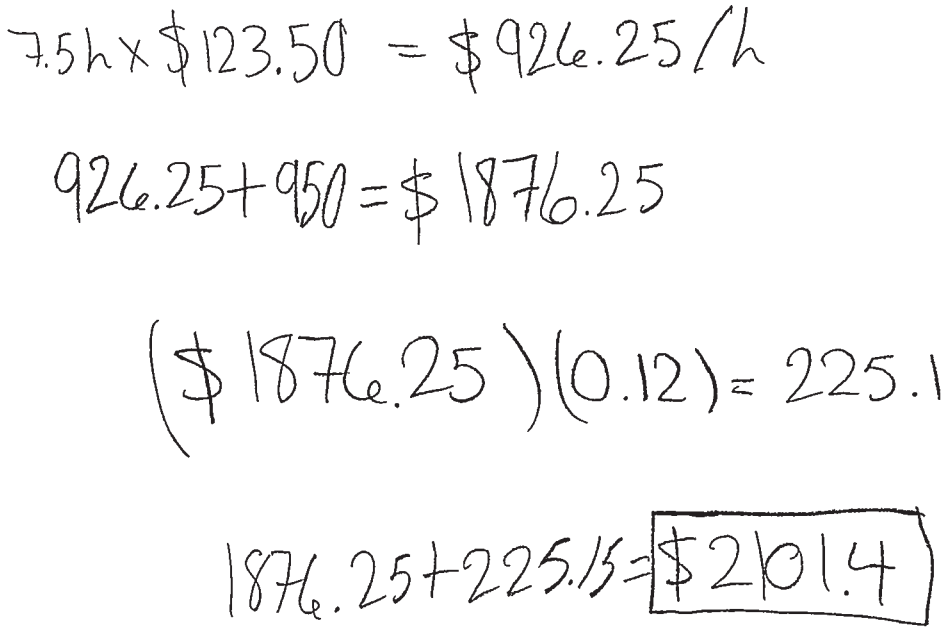


Mark: 1.5 out of 2

Rationale: Award full marks
0.5 mark deduction for procedural error (incorrect hours)

Exemplar 3

2 marks



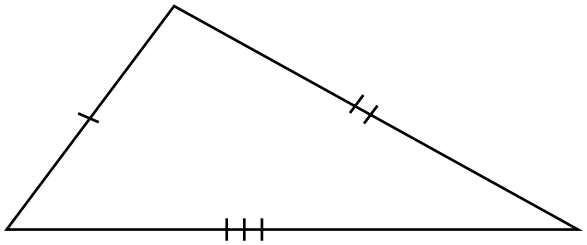
Mark: 1.5 out of 2

Rationale: Award full marks
0.5 mark deduction for procedural error (incorrect hours)
E6 (rounding: monetary values are not expressed to two decimals)

Geometry and Trigonometry

Question 22 E6.G.2 1 mark

Identify the type of triangle shown in the diagram below.



A) Scalene

B) Equilateral

C) Isosceles

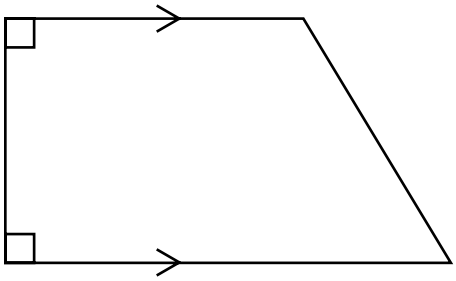
D) Right

Answer: A

Question 23 E6.G.2 2 marks

Sketch and label all side and angle properties of a right trapezoid.

Answer:

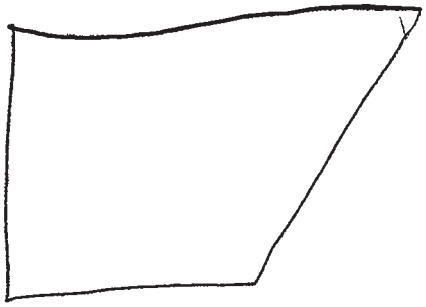


← 0.5 mark for sketch of a right trapezoid
← 1 mark for one pair of opposite parallel sides indicated
← 0.5 mark for two right angles indicated

Note to marker: One right angle indicated is acceptable.

Exemplar 1

2 marks



Mark: 0.5 out of 2

Rationale: 0.5 mark for sketch of a right trapezoid

Exemplar 2

2 marks

2 right angles

1 parallel pair of lines

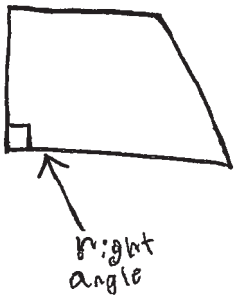
Mark: 1.5 out of 2

Rationale: Award full marks
0.5 mark deduction for procedural error (parallel sides not indicated)

Exemplar 3

2 marks

4 sides

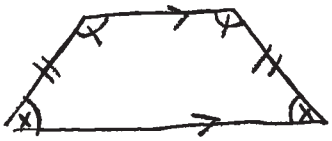


Mark: 1 out of 2

Rationale: 0.5 mark for sketch of a right trapezoid
0.5 mark for right angle indicated

Exemplar 4

2 marks



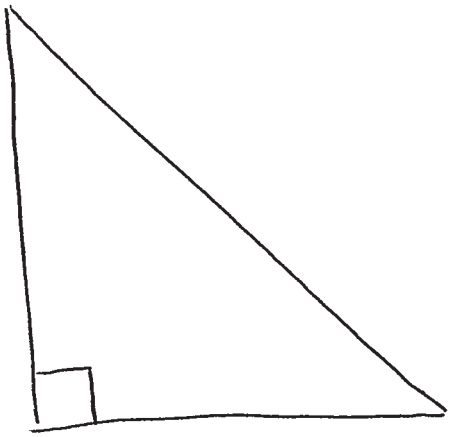
- equal angles across from each other on the parrallell lines
- has one pair of parrallell sides.

Mark: 1 out of 2

Rationale: 1 mark for opposite parallel sides indicated

Exemplar 5

2 marks



Mark: 0 out of 2

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Question 24 E6.G.2 2 marks

A regular polygon has equal exterior angles of 72°.

A) Calculate the number of sides of the regular polygon. (1 mark)

Show your work.

Answer:

$72° = \frac{360°}{n}$ ← 0.5 mark for substitution

$n = \frac{360°}{72°}$

$n = 5$ sides ← 0.5 mark for number of sides

B) Calculate the size of each interior angle in the regular polygon. (1 mark)

Show your work.

Answer:

Interior angle $= 180° - 72°$ ← 0.5 mark for subtraction

$= 108°$ ← 0.5 mark for angle

OR

Answer:

Interior angle $= \frac{180°(5-2)}{5}$ ← 0.5 mark for consistent substitution

$= 108°$ ← 0.5 mark for consistent angle

Exemplar 1

2 marks

A) 

B) 

Mark: 1 out of 2

Rationale: 0.5 mark for number of sides in Part A
0.5 mark for angle in Part B

Exemplar 2

2 marks

A) 72 total. 

3 sides.

B) $IA = \frac{180(n-2)}{n}$

$IA = \frac{180(3-2)}{3}$

$IA = \frac{180(1)}{3}$

$IA = 180 \div 3$

$IA = 60^{\circ}$

(all sides and angles measure the same in regular polygons)

Mark: 1 out of 2

Rationale: Incorrect answer in Part A
Award full marks in Part B (follow-through error)

Question 25 E6.G.2 2 marks

Determine the number of diagonals in a regular nonagon (9-sided polygon).

Show your work.

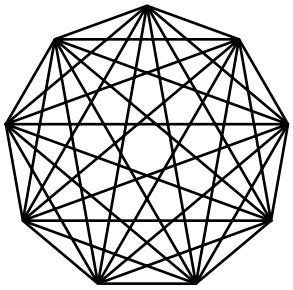
Answer:

$D = \frac{9(9-3)}{2}$ ← 1 mark for substitution

$D = 27$ diagonals ← 1 mark for number of diagonals

OR

Answer:



← 1 mark for diagram

27 diagonals ← 1 mark for number of diagonals

Exemplar 1

2 marks

27

Mark: 1 out of 2

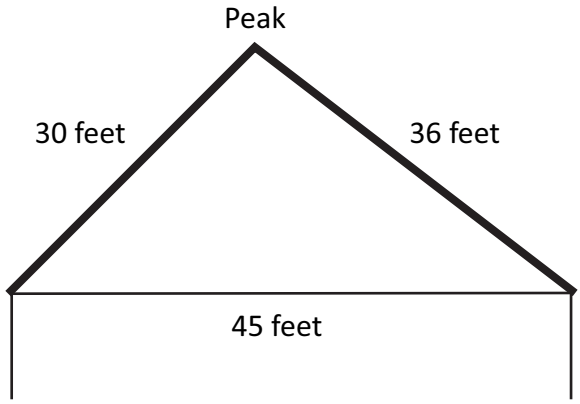
Rationale: 1 mark for number of diagonals

Question 26 E6.G.1 2 marks

An architect designed the roof of a chalet to have a span of 45 feet, with slanted sides of 36 feet and 30 feet.

Calculate the measure of the angle of the roof's peak.

Show your work.



Answer:

$\cos x = \dfrac{(30)^2 + (36)^2 - (45)^2}{2(30)(36)}$ ← 0.5 mark for identifying Cosine Law
← 0.5 mark for substitution

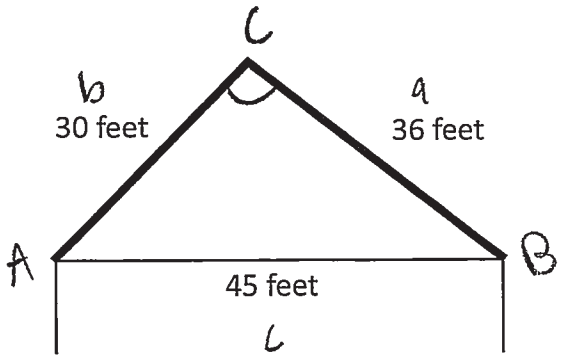
$x = \cos^{-1}(0.07916...)$ ← 1 mark for calculating angle

$x = 85.45933...$

$x = 85.46°$

Exemplar 1

2 marks



$$\cos C = \frac{30^2 + 45^2 - 36^2}{2(30)(45)}$$

$$\cos C = \frac{2925 - 1296}{2700}$$

$$\cos C = 0.60\overline{3}$$

$$C = \cos^{-1}(0.60\overline{3})$$

$$\boxed{C = 53°}$$

Mark: 1.5 out of 2

Rationale: 0.5 mark for identifying Cosine Law
1 mark for calculating angle (follow-through error)
E6 (rounding)

Exemplar 2

2 marks

$$\cos A = \frac{b^2 + c^2 - A^2}{2bc}$$

$$\cos A = \frac{30^2 + 36^2 - 45^2}{2(30)(36)}$$

$$\cos 2195.0625 = 0.81852588 =$$

$$\cos^{-1} = 0.81852588 = 35.06°$$

Mark: 1 out of 2

Rationale: 0.5 mark for identifying Cosine Law
0.5 mark for substitution

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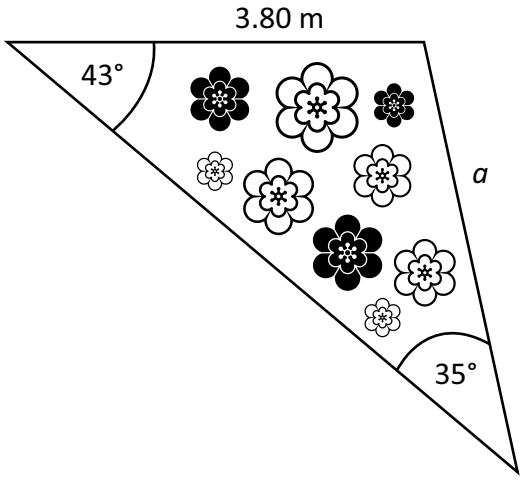
Question 27 E6.G.1 2 marks

Nevaeh has a flower bed in the shape of a triangle.



Calculate the length of the missing side, a.

Show your work.

Answer:

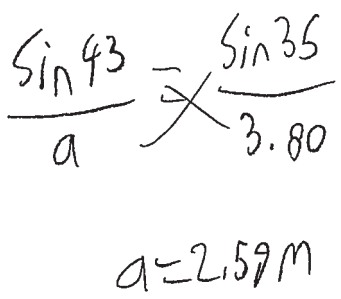
$$\frac{a}{\sin 43°} = \frac{3.80}{\sin 35°}$$ ← 0.5 mark for identifying Sine Law
← 0.5 mark for substitution

$$a = \frac{(3.80)(\sin 43°)}{\sin 35°}$$ ← 1 mark for calculating side a

$a = 4.52$ m

Exemplar 1

2 marks

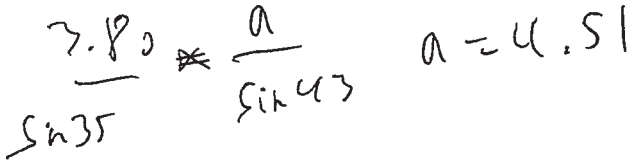


Mark: 1 out of 2

Rationale: 0.5 mark for identifying Sine Law
0.5 mark for substitution

Exemplar 2

2 marks

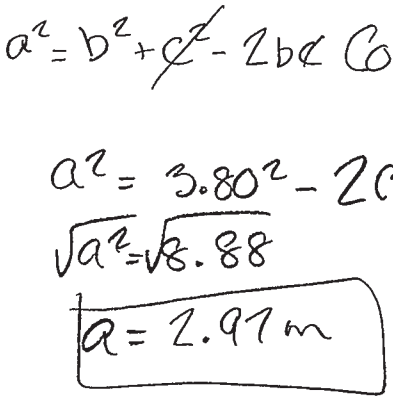


Mark: 2 out of 2

Rationale: Award full marks
E5 (missing units)
E6 (rounding)

Exemplar 3

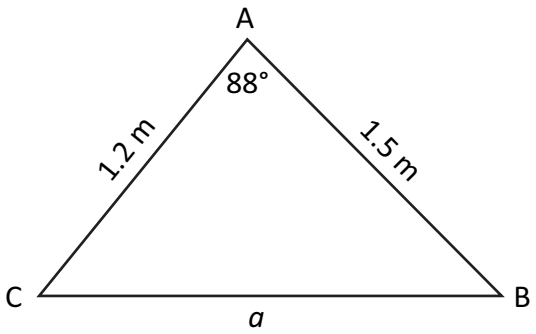
2 marks



Mark: 0 out of 2

Question 28 E6.G.1 1 mark

Identify which formula could be used to determine the length of side a.



A) $a^2 = 1.2^2 + 1.5^2$

B) $a^2 = 1.2^2 + 1.5^2 + 2(1.2)(1.5)\cos 88°$

C) $a^2 = 1.2^2 + 1.5^2 - 2(1.2)(1.5)\cos 88°$

D) $\dfrac{a}{\sin 88°} = \dfrac{1.2}{\sin B}$

Answer: C

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Precision Measurement

Note: Do not round answers in this section.

Question 29 E5.P.1 3 marks

A) State the range for the following form of tolerance. (1 mark)

$$35°C$$
$$-10°C$$

Answer:

45°C

B) State the minimum value of $65.8\ \text{mm}^{+4.2\ \text{mm}}_{-1.3\ \text{mm}}$. (1 mark)

Answer:

64.5 mm

C) State the nominal value of 5321 ft $\pm$ 250 ft. (1 mark)

Answer:

5321 ft

Exemplar 1

3 marks

A) 35^{+10}_{-10}

$= 25°C$ & $45°C$

B) $65.8 - 1.3 = 64.5\ mm$

C) $\frac{5071+5571}{2}$

$= \frac{10642}{2}$

$= 5321\ ft$

Mark: 2 out of 3

Rationale: Incorrect answer in Part A
Correct answer in Part B and C

Exemplar 2

3 marks

A) $35°C^{+0}_{-10}$

B) $65.8 - 1.3 = 64.5\ mm$

C) 5721

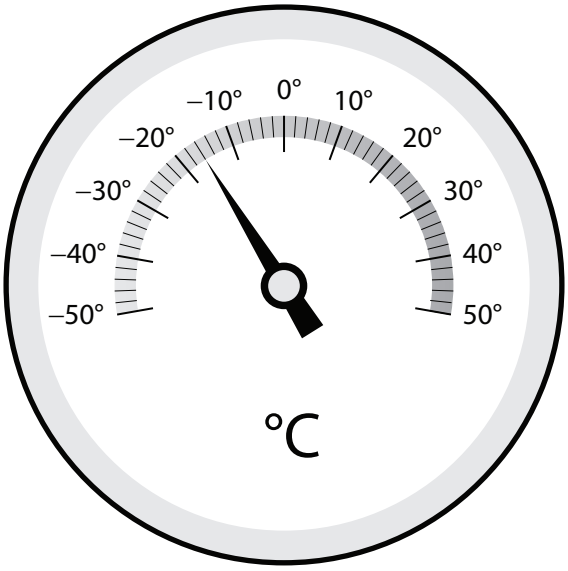
Mark: 2 out of 3

Rationale: Incorrect answer in Part A
Correct answer in Part B and C
E5 (missing units) in Part C

Question 30 E5.P.1 2 marks

State the temperature shown on the thermometer below in the form:

measurement $\pm$ uncertainty



Answer:

$-16°C \pm 1°C$

← 1 mark for measurement
← 1 mark for uncertainty in the correct form

Exemplar 1

2 marks

precision 2°C

uncertainty = 1/2 precision

= 1°C

16°C ± 1°C

Mark: 1 out of 2

Rationale: 1 mark for uncertainty in the correct form

Exemplar 2

2 marks

−16° ± 2°

Mark: 1 out of 2

Rationale: 1 mark for measurement
E5 (incorrect units)

Exemplar 3

2 marks

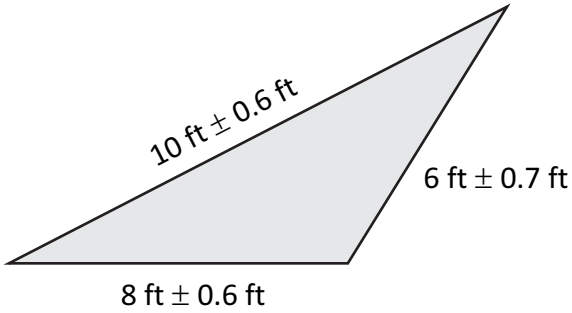
−16° + 66°
−34°

Mark: 1 out of 2

Rationale: 1 mark for measurement
E5 (incorrect units)

Question 31 E5.P.1 2 marks

A garden is being fenced as shown below.



Calculate the maximum length of fencing required given the measurements and the uncertainties above.

Show your work.

Answer:

Maximum length $= (10 + 0.6) + (6 + 0.7) + (8 + 0.6)$ ← 1 mark for addition of uncertainties

$= 10.6 + 6.7 + 8.6$ ← 1 mark for calculating maximum total fencing

$= 25.9$ ft

Exemplar 1

2 marks

10.06 ft
+ 6.7 ft
+ 8.6 ft
25.36 ft

Mark: 2 out of 2

Rationale: Award full marks
E3 (transcription error)

Exemplar 2

2 marks

10 + 8 + 6 = 24ft total
0.6 + 0.6 + 0.7 = 1.9ft inc total

24 ± 1.9ft

max = 25.9ft
min = 22.1ft

Mark: 2 out of 2

Exemplar 3

2 marks

10ft + 0.6ft = 10.6ft
8ft + 0,6ft = 8.6 ft
6ft + 0.7 ft = 6.7 ft

Mark: 1 out of 2

Rationale: 1 mark for addition of uncertainties

Question 32 E5.P.1 1 mark

Three of the four forms of tolerance listed below indicate the same measurement in litres.

Identify the form of tolerance that indicates a different measurement.

A) $5.1\ \text{L}\ ^{+4.4\ \text{L}}_{-4.4\ \text{L}}$

B) $9.5\ \text{L} \pm 4.4\ \text{L}$

C) $13.9\ \text{L}$
$5.1\ \text{L}$

D) $5.1\ \text{L}\ ^{+8.8\ \text{L}}_{-0}$

Answer: A

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Question 33 E5.P.1 1 mark

Explain why the concept of tolerance is important when installing a door.

Sample answer:

If the door is too large it will not fit in the opening and if it is too small the opening will not be covered and air will be let in.

Note to marker: Award full marks if only the maximum or only the minimum is correctly explained.

Exemplar 1

1 mark

The concept of tolerance would be important for installing a door because it would include the total amount the measurement can vary.

Mark: 0 out of 1

Exemplar 2

1 mark

Incase you cut the door to big or to small, tolerance helps to avoid that

Mark: 0.5 out of 1

Rationale: Award full marks
0.5 mark deduction for lack of clarity (avoid what?)

Exemplar 3

1 mark

Because one wrong measurement and the door might not work

Mark: 0.5 out of 1

Rationale: Award full marks
0.5 mark deduction for lack of clarity (not work how?)

Statistics

Question 34 E5.S.1 2 marks

Ten students were asked to calculate the distance in kilometers they travelled one-way to school. The data is listed below.

0.2	0.8	1.1	1.5	1.8	3.9	4.8	5.0	5.2	5.2

A) Determine the median distance travelled. (1 mark)

Show your work.

Answer:

$\text{Median} = \dfrac{1.8 + 3.9}{2}$ ← 0.5 mark for process

$= 2.85$ km ← 0.5 mark for consistent median

B) State the mode. (1 mark)

Answer:

5.2 km

Exemplar 1

2 marks

A) 0.2, 0.8, 1.1, 1.5, 1.8, 3.9, 4.8, 5.0, 5.2, 5.2

$$\frac{3.9}{1.8} = 2.16$$

B) 5.2

Mark: 1 out of 2

Rationale: Incorrect answer in Part A
Award full marks in Part B
E5 (missing units)

Exemplar 2

2 marks

A) $\frac{1.8+3.9}{2}$

2.85

B) 5.2

Mark: 2 out of 2

Rationale: Award full marks
E5 (missing units)

Question 35 E5.S.1 3 marks

Kenyi is in a food competition and is asked to create three dishes. Their points for each round are recorded below.

The first and second rounds are worth 30% each and the third round is worth 40%.

Round	Points	Weight
Round One	16	30%
Round Two	17	30%
Round Three	18.5	40%

A) Calculate Kenyi's weighted mean. (2 marks)

Show your work.

Answer:

$$\begin{aligned}\text{Weighted mean} &= 16(0.30) + 17(0.30) + 18.5(0.40) && \leftarrow \text{1 mark for multiplication}\\ &= 4.8 + 5.1 + 7.4 && \leftarrow \text{1 mark for addition}\\ &= 17.3\end{aligned}$$

B) Contestants win a prize if their weighted mean is at least 18 points.

Justify whether Kenyi will win a prize. (1 mark)

Answer:

No, Kenyi did not score at least 18 points so Kenyi will not win a prize.

Exemplar 1

3 marks

A)

16	30% = 4.8
17	30% = 5.1
18.5	40% = 9.25

19.15

B) Kenyi will win a prize because his weighted mean is 19.15.

Mark: 2.5 out of 3

Rationale: Award full marks in Part A
0.5 mark deduction for arithmetic error in Part A
Award full marks in Part B (follow-through error)

Exemplar 2

3 marks

A) $\frac{16(0.3)+17(0.3)+18.5(0.4)}{3} =$

$\frac{4.8+5.1+7.4}{3} = 5.8$

B) NO

Mark: 1 out of 3

Rationale: Award full marks in Part A
1 mark deduction for concept error (dividing)

Exemplar 3

3 marks

A) $\frac{16 + 17 + 18.5}{3} = 17.17$

B) No he will not because his score is under 18

Mark: 1 out of 3

Rationale: Incorrect answer in Part A
Award full marks in Part B (follow-through error)

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Question 36 E5.S.1 2 marks

Niimi is a soap stone carver and sells his work in Northern Manitoba. The number of hours he spent on each carving is given below.

10.5	12	14	13	9	21	12	7	15

Calculate the trimmed mean of the hours Niimi spent on a soap stone carving by removing the highest and lowest hours spent.

Show your work.

Answer:

$$\text{Trimmed mean} = \frac{10.5 + 12 + 14 + 13 + 9 + 12 + 15}{7} \quad \leftarrow \text{1 mark for addition}$$
$$\leftarrow \text{1 mark for division}$$

$$= \frac{85.5}{7}$$

$$= 12.21 \text{ hours}$$

Note to marker: No marks will be awarded for the calculation of arithmetic mean.

Exemplar 1

2 marks

10.5	12	14	13	9	~~21~~	12	~~1~~	15

$10.5 + 12 + 14 + 13 + 9 + 12 + 15 = \frac{85.5}{7}$

$= 12.21$

Mark: 2 out of 2

Rationale: Award full marks
E2 (inappropriate use of equal sign)
E5 (missing units)

Exemplar 2

2 marks

10.5	12	14	13	9	~~21~~	12	~~1~~	15

12.21 = trimmed mean

Mark: 1 out of 2

Rationale: Award a maximum of 1 mark when no work is shown
E5 (missing units)

Exemplar 3

2 marks

$$\frac{113.5}{9}$$

12.61

Mark: 0 out of 2

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Question 37 E5.S.1 1 mark

The scores from a recent math quiz are given below.

Score	Number of Students
8	3
10	6
10.5	5
11	8
12	5

Asmee incorrectly calculated the weighted mean on the quiz and their work is recorded:

$$\text{Weighted Mean} = \frac{8 + 10 + 10.5 + 11 + 12}{5}$$

$$= 10.3$$

Describe an error Asmee made in their work.

Sample Answers:

- Asmee did not multiply to include the number of students for each score.
- Asmee did not divide by all 27 students who wrote the quiz.
- Asmee did not calculate the weighting for each score.

Exemplar 1

1 mark

Data × weight

Score	Number of Students	
8	3	= 24
10	6	= 60
10.5	5	= 52.5
11	8	= 88
12	5	= 60
		284.5

She found the mean, not the WEIGHTED mean $\frac{284.5}{27} = 10.54$

Mark: 1 out of 1

Exemplar 2

1 mark

She added up the students wrong

Mark: 0.5 out of 1

Rationale: Award full marks

0.5 mark deduction for lack of clarity (which number represents total students?)

Exemplar 3

1 mark

An error is that they did not include the number of students that got those scores.

Mark: 1 out of 1

Question 38 E5.S.1 2 marks

Sarjit was one of 130 people who completed a mortgage broker course. There were 76 students who scored lower than her.

Calculate Sarjit's percentile rank.

Show your work.

Answer:

$\text{PR} = \frac{76}{130} \times 100$ ← 0.5 mark for the value of *b*
← 0.5 mark for the value of *n*

$= 58.46153...$

$= 58^{\text{th}}$ or 59^{th} or P_{58} or P_{59} ← 1 mark for calculating the percentile rank

Exemplar 1

2 marks

$$PR = \frac{76}{130} \times 100$$

$$= 58.46\ \%$$

Mark: 1 out of 2

Rationale: Award full marks
1 mark deduction for concept error (stating percentile rank as a percentage)

Exemplar 2

2 marks

$$\frac{76}{130} \times 100 = 58.46$$

Mark: 1 out of 2

Rationale: 0.5 mark for the value of *b*
0.5 mark for the value of *n*

Appendices

Appendix A: Table of Questions by Unit and Learning Outcome

Home Finance		
Question	**Learning Outcome**	**Mark(s)**
1	E6.H.1	1
2 a)	E6.H.1	2
2 b)	E6.H.1	1
3 a)	E6.H.1	2
3 b)	E6.H.1	1
3 c)	E6.H.1	0.5
4	E6.H.1	1.5
5	E6.H.1	2
6	E6.H.1	2.5
		Total = 13.5

Probability		
Question	**Learning Outcome**	**Mark(s)**
7	E6.P1	1
8	E6.P1	1
9	E6.P1	1
10	E6.P1	1
11	E6.P1	1
12 a)	E6.P1	1
12 b)	E6.P1	1
13 a)	E6.P1	2
13 b)	E6.P1	1
		Total = 10

Vehicle Finance		
Question	**Learning Outcome**	**Mark(s)**
14	E5.V.1	2
15	E5.V.1	1
16	E5.V.1	1.5
17	E5.V.1	2
18	E5.V.1	2
19 a)	E5.V.1	2
19 b)	E5.V.1	2
20	E5.V.1	1
21	E5.V.1	2
		Total = 15.5

Geometry and Trigonometry		
Question	**Learning Outcome**	**Mark(s)**
22	E6.G.2	1
23	E6.G.2	2
24 a)	E6.G.2	1
24 b)	E6.G.2	1
25	E6.G.2	2
26	E6.G.1	2
27	E6.G.1	2
28	E6.G.1	1
		Total = 12

Precision Measurement		
Question	**Learning Outcome**	**Mark(s)**
29 a)	E5.P.1	1
29 b)	E5.P.1	1
29 c)	E5.P.1	1
30	E5.P.1	2
31	E5.P.1	2
32	E5.P.1	1
33	E5.P.1	1
		Total = 9

Statistics		
Question	**Learning Outcome**	**Mark(s)**
34 a)	E5.S.1	1
34 b)	E5.S.1	1
35 a)	E5.S.1	2
35 b)	E5.S.1	1
36	E5.S.1	2
37	E5.S.1	1
38	E5.S.1	2
		Total = 10

Appendix B: Irregularities in Provincial Tests

A Guide for Local Marking

During the marking of provincial tests, irregularities are occasionally encountered in test booklets. The following list provides examples of irregularities for which an *Irregular Test Booklet Report* should be completed and sent to the department:

- completely different penmanship in the same test booklet
- incoherent work with correct answers
- notes from a teacher indicating how they assisted a student during test administration
- student offering that they received assistance on a question from a teacher
- student submitting work on unauthorized paper
- evidence of cheating or plagiarism
- disturbing or offensive content
- no responses provided by the student or only incorrect responses (“0”)

Student comments or responses indicating that the student may be at personal risk of being harmed or of harming others are personal safety issues. This type of student response requires an immediate and appropriate follow-up at the school level. In this case, please ensure the department is made aware that follow-up has taken place by completing an *Irregular Test Booklet Report*.

Except in the case of cheating or plagiarism where the result is a provincial test mark of 0%, it is the responsibility of the division or the school to determine how they will proceed with irregularities. Once an irregularity has been confirmed, the marker prepares an *Irregular Test Booklet Report* documenting the situation, the people contacted, and the follow-up. The original copy of this report is to be retained by the local jurisdiction and a copy is to be sent to the department along with the test materials.

Irregular Test Booklet Report

Test: _____

Date marked: _____

Booklet No.: _____

Problem(s) noted: _____

Question(s) affected: _____

Action taken or rationale for assigning marks: _____

Follow-up: _____

Decision: _____

Marker's Signature: _____

Principal's Signature: _____

For Department Use Only—After Marking Complete

Consultant: _____

Date: _____

Appendix C: Marking Guidelines

Errors that are conceptually related to the learning outcomes associated with the question will result in a 1 mark deduction.

Each time a student makes one of the following errors, a 0.5 mark deduction will apply:

- arithmetic error
- procedural error
- terminology error in explanation
- lack of clarity in written responses

Communication Errors

The following errors, which are not conceptually related to the learning outcomes associated with the question, may result in a 0.5 mark deduction. Each error can only be deducted once per test and is tracked in a separate section on the *Scoring Sheet*.

The total mark deduction for communication errors for any student response is not to exceed the marks awarded for that response. For example, there would be no communication error deductions if no marks were awarded for a given response.

E1 (Final Answer)

- final answer not stated
- final answer not clearly indicated
- answer presented in another part of the question

E2 (Notation)

- notation error
- inappropriate use of equal sign

E3 (Transcription/Transposition)

- makes a transcription error (inaccurate transferring of information from one part of the page to another)
- makes a transposition error (changing order of digits)

E4 (Whole Units)

- does not use whole units in contextual questions involving discrete data (e.g., people, cans of paint)

E5 (Units)

- uses incorrect units of measure
- does not include units in final answer (e.g., missing dollar sign for monetary values, missing degrees for angles)
- answer stated in gradians or radians instead of degrees

E6 (Rounding)

- rounds incorrectly
- rounds too soon
- does not express the answer to the appropriate number of decimal places (e.g., monetary values are not expressed to two decimals)