Grade 12 Essential RESCUE Test

A Mid-Term test to Rescue some marks for some students
This test will be suitably weighted in value to favour elevating student marks.

Open book! Use loan tables, a cheat sheet, etc.'

"State your answer" means just give your final answer since it is not practicable to show work.

Bonus Questions are worth two marks each if you need the marks

Loans. Lyle takes a loan for $22,600 at an Annual Percentage Rate (APR) rate of 25% (silly!!!) *
from the local car dealer. He makes monthly payments for 4 years. His monthly payments are:
(select the best or closest answer)

○ $33.16 — l.o.l awfully low!

33.16 · 22,600/1,000 = $749.42

⊘ $749

○ $470

○ $565

○ $1,412.50

really?
1400·48 =
$67,000
that's a lot
of moola!

Using App

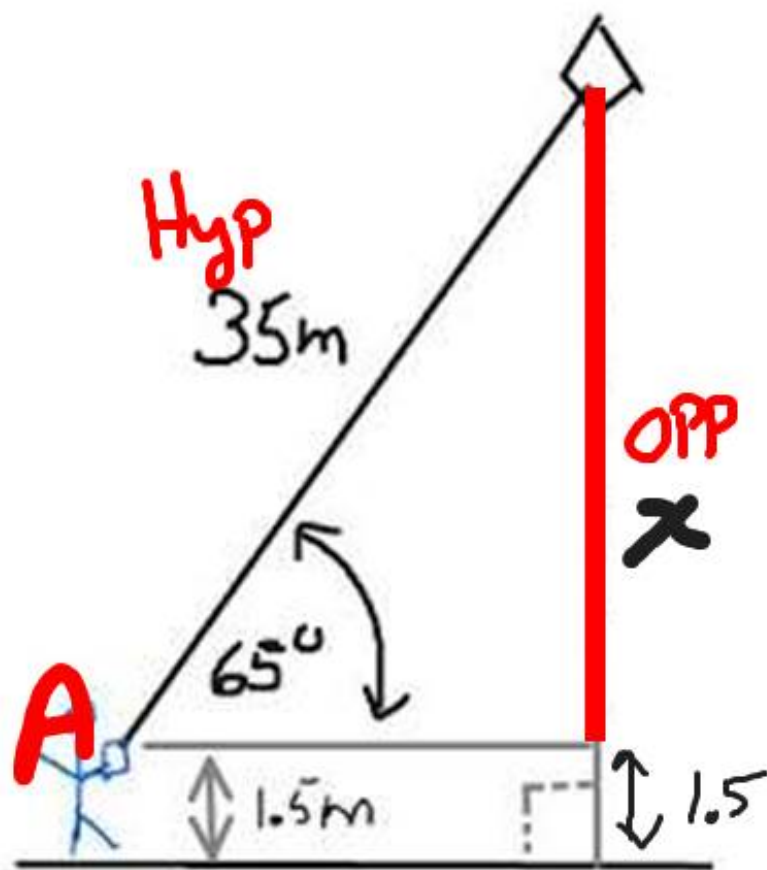|	
Present Value	22,600
Payments	-749.35
Future Value	0
Annual Rate (%)	25
Periods	48
Compounding	Monthly

Monthly Vehicle Loan Payments per Thousand Borrowed

Interest Rate	Years to Repay Loan				
	1	2	3	4	5
4.00%	$85.15	$43.42	$29.52	$22.58	$18.42
4.25%	$85.26	$43.54	$29.64	$22.69	$18.53
4.50%	$85.38	$43.65	$29.75	$22.80	$18.64
4.75%	$85.49	$43.76	$29.86	$22.92	$18.76
5.00%	$85.61	$43.87	$29.97	$23.03	$18.87
5.25%	$85.72	$43.98	$30.08	$23.14	$18.99
5.50%	$85.84	$44.10	$30.20	$23.26	$19.10
5.75%	$85.95	$44.21	$30.31	$23.37	$19.22
6.00%	$86.07	$44.32	$30.42	$23.49	$19.33
6.50%	$86.30	$44.55	$30.65	$23.71	$19.57
7.00%	$86.53	$44.77	$30.88	$23.95	$19.80
7.50%	$86.76	$45.00	$31.11	$24.18	$20.04
8.00%	$86.99	$45.23	$31.34	$24.41	$20.28
10.00%	$87.92	$46.14	$32.27	$25.36	$21.25
15.00%	$90.26	$48.49	$34.67	$27.83	$23.79
20.00%	$92.63	$50.90	$37.16	$30.43	$26.49
25.00%	$95.04	$53.37	$39.76	$33.16	$29.35

Sandra is out flying a kite with her son. The string of the kite is 2 points
35 m long. Sandra measures the angle of elevation as 65
degrees with her phone 1.5 m above the ground. State the
height of the kite above the ground. *

SOH
~~CAH~~
~~TOA~~

$\sin\angle A = \dfrac{OPP}{HYP}$

$\sin 65° = \dfrac{x}{35m}$

$35m \cdot \sin 65° = \dfrac{x}{35m} \cdot 35m$

$x = 35m \cdot \sin 65° = 31.72m$

But add another 1.5m for
height of angle above ground
$31.72 + 1.5 = \boxed{33.22 \text{ metres}}$

Hyp
35m

OPP
x

A 65°

↕ 1.5m   ↕ 1.5

Your answer

Bonus. Determine the sum of the all the counting numbers from 1 to 25

$$1 + 2 + 3 + 4 + \cdots + 21 + 22 + 23 + 24 + 25$$

How many 26's do you have?

12 twenty sixes and a "13"

left alone in middle.

$$12 \cdot 26 = 312$$
$$+ \ 13$$
$$\overline{325 \ \text{Total Sum}}$$

Bonus. Determine the sum of the all the counting numbers from 1 to 25

$$1 + 2 + 3 + 4 + + + \quad 21 + 22 + 23 + 24 + 25$$

OR MAYBE DO 12 twenty fives

$$= 300$$

plus that 25 at the end = 325

or maybe see a pattern, make a formula?

. . . .

Determine the mean of the following set of numbers: [state your answer to nearest 0.1] *

$=$ $n = 10$

8	9	8	6	6	37
5	8	2	6	2	+23

$\overline{60}$

Your answer

$$\overline{X} = \frac{\Sigma x}{n}$$

$$\overline{X} = \quad ^{60}/_{10} = 6.0$$

↑

to nearest 0.1

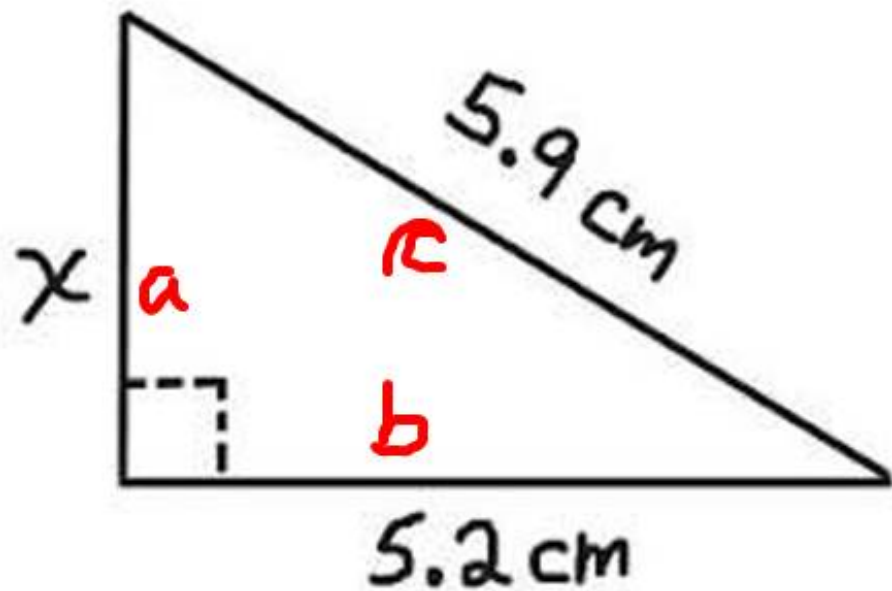An outlier data tends to affect this measure of central tendency the most: *

○ range

○ mode

○ mean

○ median

○ percentile rank

where the distribution would balance

this outlier will tip the balance

State the measure of length x *

Pythagoras!

$$c^2 = a^2 + b^2$$

$$5.9^2 = x^2 + 5.2^2$$

$$34.81 = x^2 + 27.04$$

$$34.81 = x^2$$
$$-27.04$$

$$7.77 = x^2$$

$$x = \sqrt{7.77} = 2.79 \text{ cm} \text{TLAR}$$

5.9 cm

x

a

c

b

5.2 cm

Problem Solving. The teacher says: "If you triple my age and add 32, the answer is 188". How old is the teacher? * 2 points

Guess and check? Logic? WORK Backwards Algebra?

Guess!

$3 \cdot 30 + 32$ ✗ $= 122$

$3 \cdot (40) + 32$ ✗ $= 152$

$3 \cdot (50) + 32$ ✗ Close $= (182)$

$3 \cdot (52) + 32$ Yes $= 188$

Teacher is 52.

WORK Backwards using logic
UN-Add the 32 we would have 156.
UN-MULTIPY BY 3; $3 \cdot \underline{?} = 156$
(56)

Algebra!

$3x + 32 = 188$
$ -32 -32$

$3x = 156$
$\overline{3} \overline{3}$

$x = (52)$

Couple other ways too!

Did you have another way?

BONUS. Student council is doing a survey to see if students want a Grad Party. 95% of the 20 students in Trisha's class say YES. 40% of Rick's 10 students say YES. 75% of Myrna's 8 students say YES. The mean number of students who say YES is: [select best or closest answer]

○ 76%

○ 70%

○ 12.67%

○ 32%

Weighted mean!   You can't average averages!!

$$\bar{x} = \frac{\sum wf \cdot x}{\sum wf}$$

$$\bar{x} = \frac{20 \cdot 95\% + 10 \cdot 40\% + 8 \cdot 75\%}{20 + 10 + 8}$$

$$\bar{x} = \frac{2900}{38} = 76.32\%$$

Josh is thinking of buying a car. He plans to finance the car with monthly payments of $450. He already has other regular debts of $1,200 per month for rent. His gross monthly income is $3,600. Determine his TDSR *

$$TDSR = \frac{Total\ Debts}{Gross\ Income} \cdot 100$$

$$= \frac{\$1,200 + \$450}{\$3,600} = \frac{\$1650}{\$3600} \cdot 100 = 45.83\%$$

So he really cannot afford that car payment if TDSR is > 40%

A new car has a value of $35,000. It depreciates in value every year, losing 20% of its value from the previous year. What is the expected value of the car after 12 years? [select best or closest answer] *

- ⊘ $2,400 $Value = 35,000 \cdot 0.8^{12}$

$$35\,000 \cdot 0.8^{12}$$
$$= 2405.18168$$

- ○ $28,000

- ○ $2,800

- ○ $175

Keegan is taking an Independent Study Grade 12 Physics course. He has received a mean mark of 83% on his assignments, 57% on his mid-term exam, and 45% on his final exam. Assignments are worth 50% of his final mark, while the mid-term exam was worth 20% of the final and the final exam is worth 30% of the final mark. Determine Keegan's final mark in this course. State you answer below. *

2 points

Ouch!

Your answer

$$\bar{x} = \frac{\Sigma wf \cdot x}{\Sigma wf} = \frac{0.5 \cdot 83\% + 0.2 \cdot 57\% + 0.3 \cdot 45\%}{0.5 + 0.2 + 0.3}$$

$$= \frac{66.4}{1.0} = 66.4\% \text{ his final course mark}$$

Brian scores gets 29 out of 45 points on his final exam. He is in a class of 34 students. Both Brian and Dave had the same score on the exam. 28 students had a lower exam score than Brian. State Brian's Percentile Rank for the exam. *

$$Rank = \frac{(B + \frac{1}{2} \cdot E)}{n} \cdot 100$$

$$= \frac{(28 + \frac{1}{2} \cdot 2)}{34} \cdot 100$$

$$= 85.29 \text{ Round up} \nearrow 86$$

Brian is ranked 86th percentile
or P_{86}. He did pretty well
compared to others even though only had ~64% on exam

35m

65°

1.5m