

Mid-Term

RESCUE Test

GRADE 11 ESSENTIAL

MrF

Grade 11 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, geometry formula sheet, a cheat sheet, etc.'

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

Show units as 'in²' for example for square inches

Loans. Lyle takes a loan for \$3,600 at an Annual Percentage Rate (APR) rate of 25% (silly!!!) from the furniture store to buy a living room suite. He makes monthly payments for 4 years. His monthly payments are:

\$120

$$33.16 \cdot \frac{3,600}{1,000} = 119.376$$

$$\approx \$120$$

~~\$900~~ WAY TOO HIGH
 $900/\text{month} \cdot 48 \text{ months} = \$43K$

~~\$75~~ TOO LOW
 $75/\text{month} \cdot 48 = \$3,600$
 so no interest

~~\$325~~ A bit too high
 $325 \cdot 48 = \$15K$

$$33.16 \cdot \frac{3600}{1000}$$

$$= 119.376$$

MONTHLY LOAN PAYMENT TABLE FOR A LOAN OF \$1,000

Annual Rate	1 Year Monthly	2 Years Monthly	3 Years Monthly	4 Years Monthly	5 Years Monthly	10 Years Monthly	15 Years Monthly
2%	\$84.24	\$42.54	\$28.64	\$21.70	\$17.53	\$9.20	\$6.88
3%	\$84.69	\$42.98	\$29.08	\$22.13	\$17.97	\$9.66	\$7.32
4%	\$85.15	\$43.42	\$29.52	\$22.58	\$18.42	\$10.12	\$7.76
5%	\$85.61	\$43.87	\$29.97	\$23.03	\$18.87	\$10.61	\$8.20
6%	\$86.07	\$44.32	\$30.42	\$23.49	\$19.33	\$11.10	\$8.64
7%	\$86.53	\$44.77	\$30.88	\$23.95	\$19.80	\$11.61	\$9.08
8%	\$86.99	\$45.23	\$31.34	\$24.41	\$20.28	\$12.13	\$9.52
9%	\$87.45	\$45.68	\$31.80	\$24.89	\$20.76	\$12.67	\$9.96
10%	\$87.92	\$46.14	\$32.27	\$25.36	\$21.25	\$13.22	\$10.40
12%	\$88.85	\$47.07	\$33.21	\$26.33	\$22.24	\$14.35	\$11.36
14%	\$89.79	\$48.01	\$34.18	\$27.33	\$23.27	\$15.53	\$12.32
16%	\$90.73	\$48.96	\$35.16	\$28.34	\$24.32	\$16.75	\$13.28
18%	\$91.68	\$49.92	\$36.15	\$29.37	\$25.39	\$18.02	\$14.24
20%	\$92.63	\$50.90	\$37.16	\$30.43	\$26.49	\$19.33	\$15.20
25%	\$95.04	\$53.37	\$39.76	\$33.16	\$29.35	\$22.75	\$18.16
30%	\$97.49	\$55.91	\$42.45	\$36.01	\$32.35	\$26.36	\$21.12
35%	\$99.96	\$58.52	\$45.24	\$38.97	\$35.49	\$30.12	\$24.08

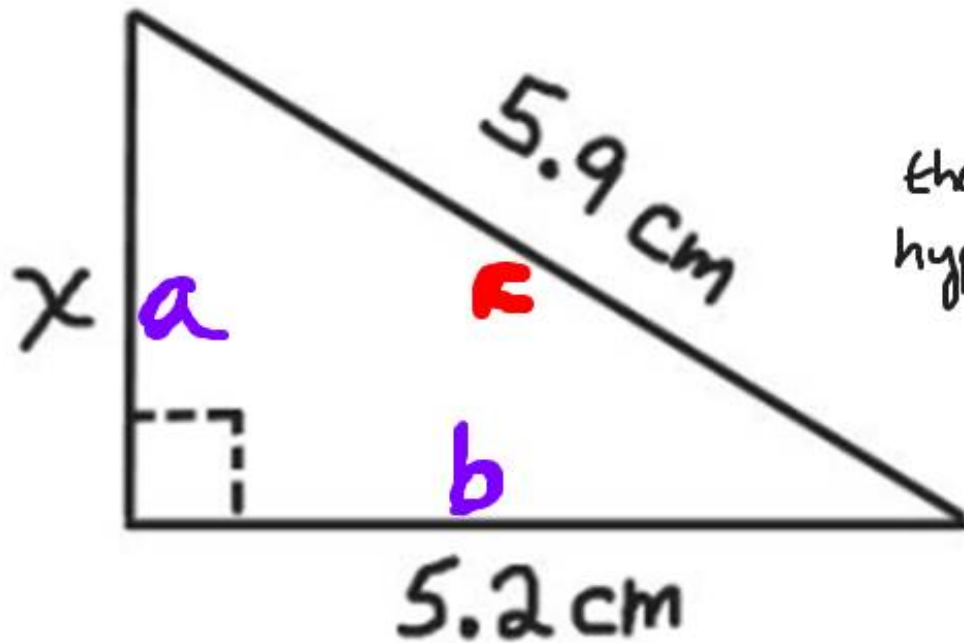
State the measure of length x *

Pythagoras!

$$c^2 = a^2 + b^2 \quad \text{For a right triangle}$$

↑
the hypotenuse

↑ ↑
the other two
and shorter sides



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

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

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

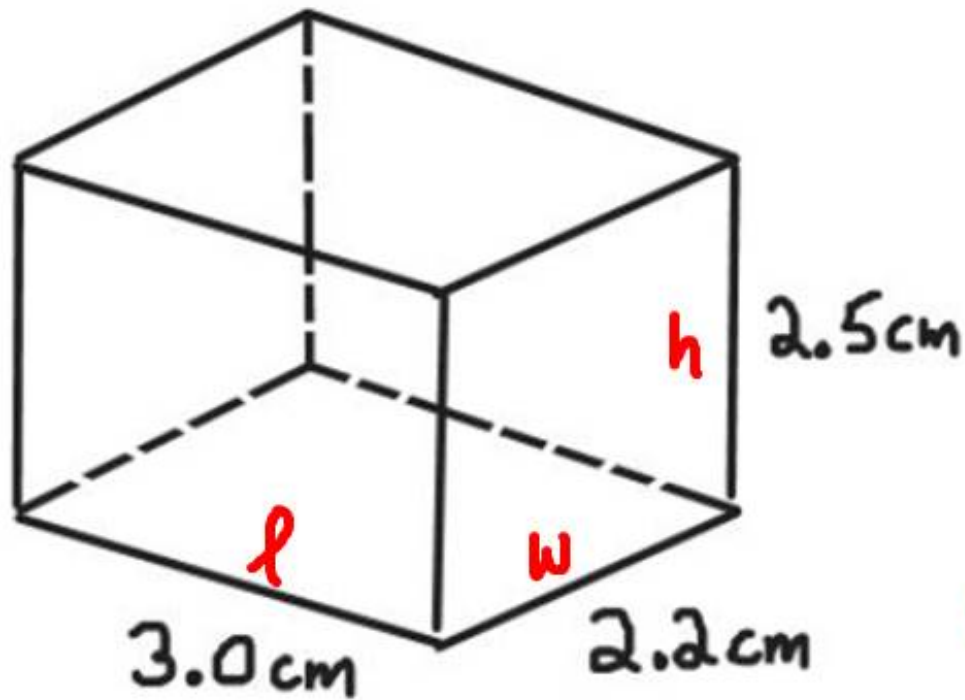
-27.04

$$x^2 = 7.77 ; x = 2.7874...$$

$$x \approx 2.79 \text{ cm}$$

TLAR

Geometry. For the rectangular prism below; state value of its Volume *



$$Vol_{\text{prism}} = \text{Base}_{\text{area}} \cdot h_{\text{prism}}$$

$$Vol = (l \cdot w) \cdot h$$

$$Vol = (3.0 \text{ cm} \cdot 2.2 \text{ cm}) \cdot 2.5 \text{ cm}$$

$$Vol = 16.5 \text{ cm}^3$$

Short-answer text

Jennifer invests some recent inheritance in a bank account (an RESP: Registered Education Savings Plan) paying 6% Annual Percentage Rate compounded quarterly to help pay for her daughter's college when she gets older. She deposits \$5,200 in the account and lets it grow for 12 years. What is the value of the investment after those 12 years. [Select

\$10,626

$$A = P \cdot \left(1 + \frac{r}{s}\right)^{n \cdot s}$$

$$A = 5,200 \cdot \left(1 + \frac{0.06}{4}\right)^{(12 \cdot 4)}$$

\$3,745

\$8,944

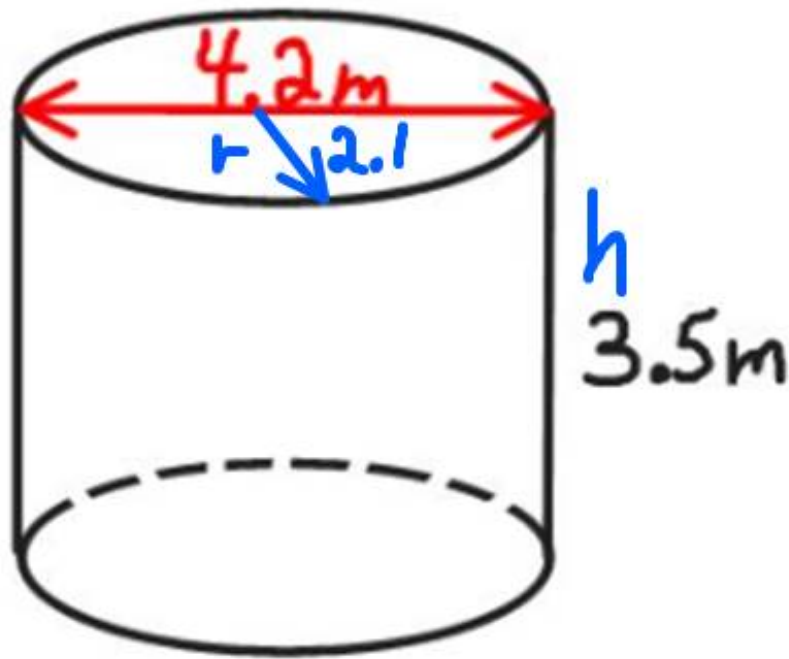
$$A = 5200 \cdot \left(1 + \frac{0.06}{4}\right)^{(12 \cdot 4)}$$

\$10,664

$$= 10626.08710$$

$$A = \$10,626.09$$

Determine the Surface Area (SA) of the Right Cylinder. State your answer



$$SA_{\text{cyl}} = 2\pi r h + 2\pi r^2$$

$$SA = 2 \cdot \pi \cdot 2.1 \text{ m} \cdot 3.5 \text{ m} + 2 \cdot \pi \cdot (2.1 \text{ m})^2$$

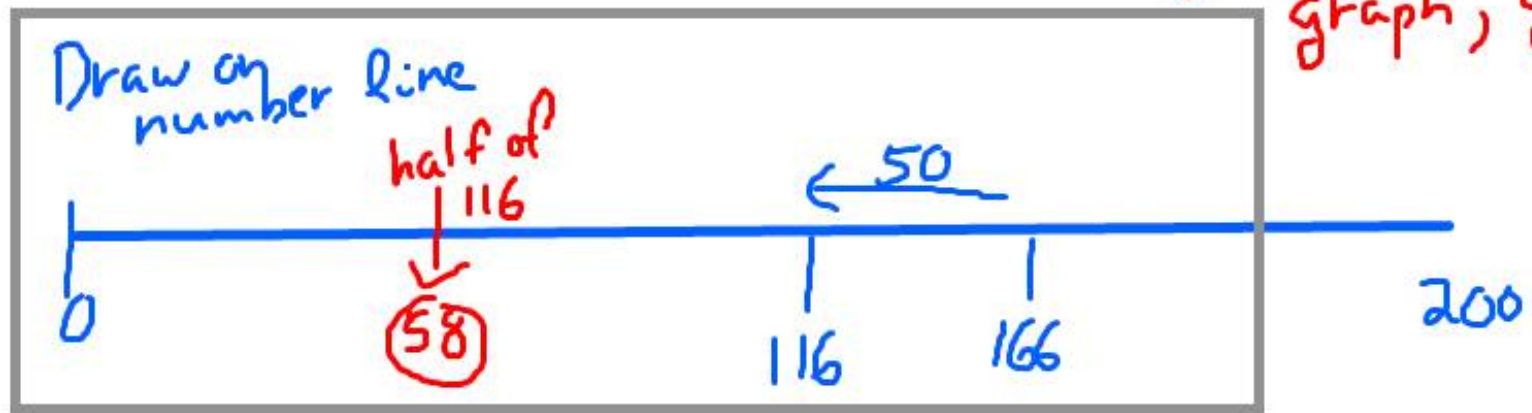
$$SA = \underset{\text{lateral side}}{46.1814\dots \text{ m}^2} + \underset{\text{top and bottom}}{27.7088\dots \text{ m}^2}$$

$$SA = \boxed{73.89 \text{ m}^2}$$

The surface of the tank is 73.89 cubic metres

Problem Solving. The teacher says: "If you double my age and add 50, the answer is 166". How old is the teacher?

Logic? work backwards, graph, guess and check, algebra, draw it,...



Guess Check

$40 * 2 + 50$	130
$50 * 2 + 50$	150
$55 * 2 + 50$	160
$58 * 2 + 50$	166

Teacher's 58

Logic. If we un-add the 50 the result would have been 116. If we un-double the 116 we get 58

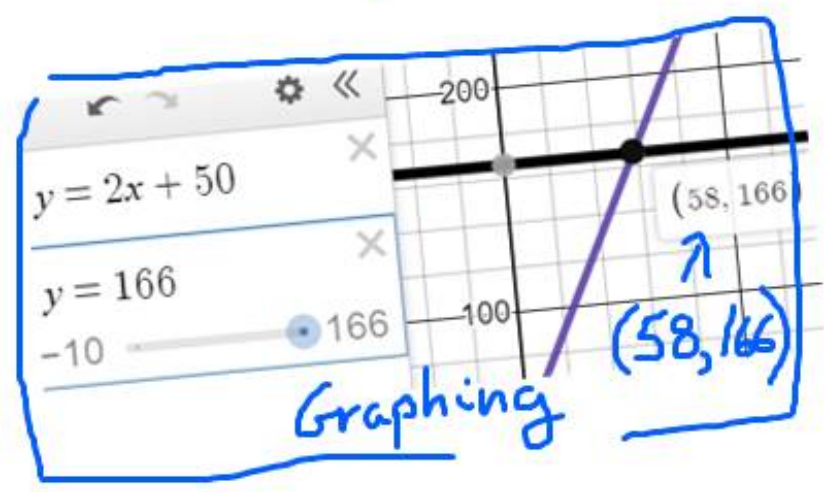
Algebra

$$2x + 50 = 166$$

$$\begin{array}{r} -50 \\ -50 \end{array}$$

$$\frac{2x}{2} = \frac{116}{2}$$

$$x = 58$$



Sarah borrows \$500 from a Pay Day loan for 2 months. **Simple Interest** is used. Sarah pays them back a total of \$551.67. The interest rate that was charged was: [select best or closest answer]

65%

62%

\$51.67

25.5% ?

Sounds pretty low! Even a charge card would be this amount

$$\begin{array}{r} 551.67 \\ -500.00 \\ \hline 51.67 \\ \text{Interest} \end{array}$$

$$I = P \cdot r \cdot t \quad \leftarrow \text{years}$$

$$51.67 = 500 \cdot r \cdot \frac{2}{12}$$

2 months is 2 pieces of a 12 piece year!

$$51.67 = 83.333... \cdot r$$

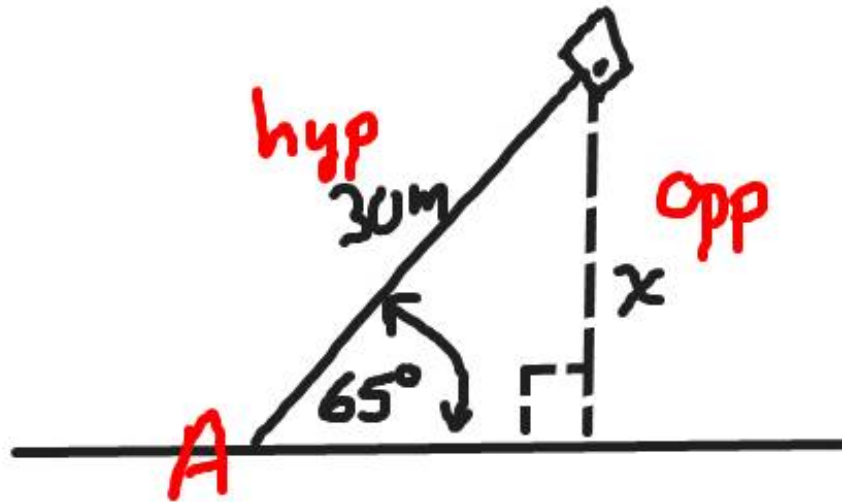
$$r = \frac{51.67}{83.333...}$$

$$500 \cdot \frac{2}{12} = 83.333...$$

$$r = \frac{51.67}{83.3333} \approx 62\%$$

$$= 0.62004024$$

Sandra is out flying a kite with her son. The string of the kite is 30 m long. Sandra measures the angle of elevation as 65 degrees. State the height



Draw a diagram!

SOH
~~CAH~~
~~TOA~~

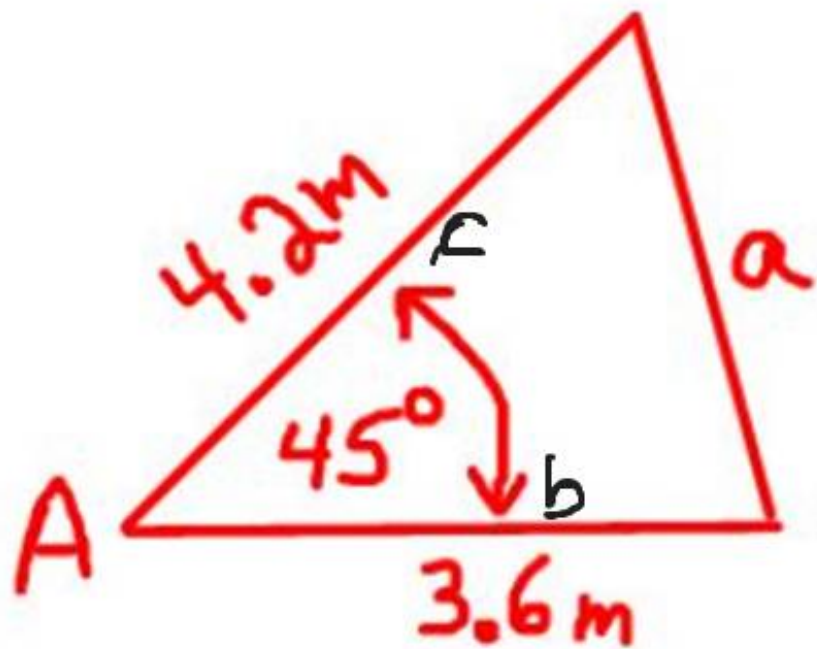
$$\sin \angle A = \frac{\text{OPP}}{\text{HYP}}$$

$$\sin 65^\circ = \frac{x}{30}$$

$$30 \sin 65 = x$$

$$\therefore x = 27.19 \text{ m} \quad \text{T.L.A.R.}$$

Bonus: Determine length a. State answer to nearest 0.01 units



Side Angle Side
Two sides and included
angle between them
→ COSINE LAW

$$a^2 = b^2 + c^2 - 2 \cdot b \cdot c \cdot \cos \angle A$$

$$a^2 = 3.6^2 + 4.2^2 - 2 \cdot 3.6 \cdot 4.2 \cdot \cos 45^\circ$$

$$a^2 = 3.6^2 + 4.2^2 - 2 \cdot 3.6 \cdot 4.2 \cdot \cos(45)$$

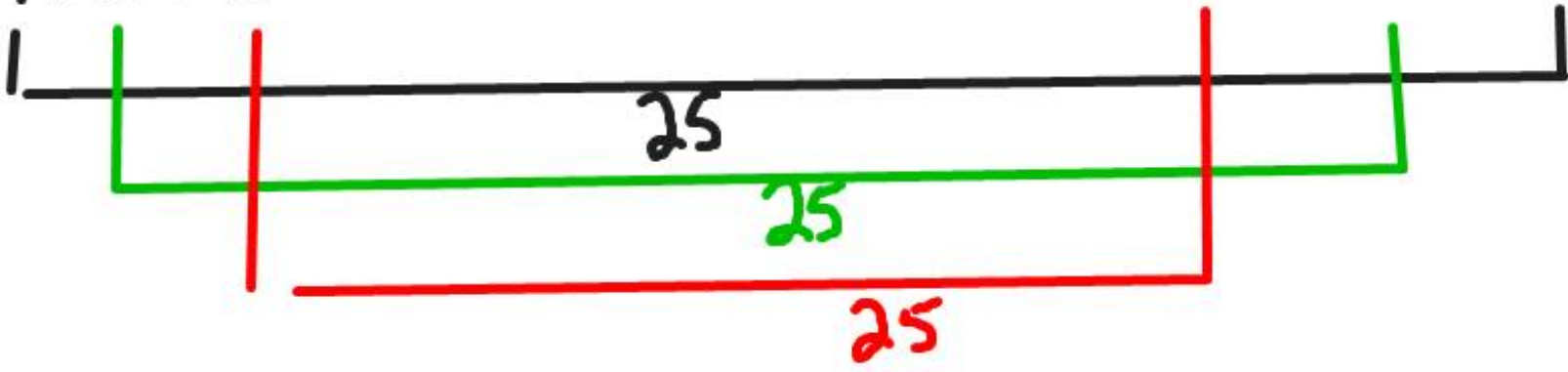
$$= 9.2170909369$$

$$a^2 = 9.2170\dots$$

$$a = \sqrt{9.2170\dots} \approx 3.04 \text{ m T.L.A.R.}$$

Bonus. Determine the sum of the counting numbers from 1 to 24

$$1 + 2 + 3 + 4 + \dots + 21 + 22 + 23 + 24 = ?$$



How many 25's? 12

$$\begin{array}{r} 25 \\ \times 12 \\ \hline = 300 \end{array}$$

$\sum_{x=1}^{24} x = \frac{n \cdot (n+1)}{2}$

In Grade 11 Applied there is a formula!

***That was it;
8 questions after three days of practice with
same questions***

***Plus a couple BONUS questions for extra
marks if needed***

