Rescue Test
Practice Questions

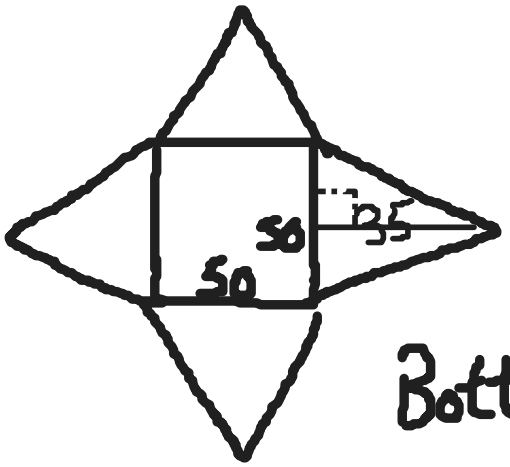
Chance to severely enhance marks

Grade 11 Essential

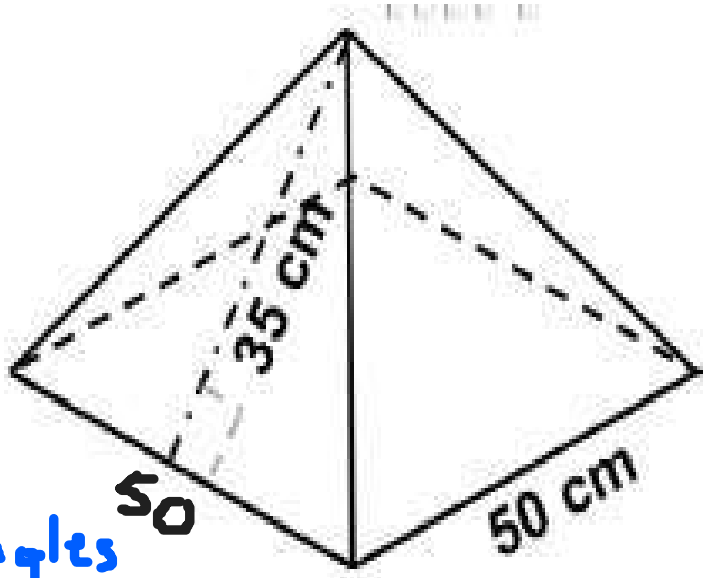
Week 6

16. Calculate the Surface Area of the Square Pyramid.

Net! Highly recommended!



A square and four triangles



Bottom $50\text{cm} \cdot 50\text{ cm} = 2{,}500\text{ cm}^2$

Four $\triangle$'s $4 \cdot (\frac{1}{2} \cdot b_\triangle \cdot h_\triangle)$

$= 4 \cdot (\frac{1}{2} \cdot 50\text{cm} \cdot 35\text{cm}) = 3{,}500\text{ cm}^2$

Total SA $6{,}000\text{ cm}^2$

17. Courtney takes a loan for **$7,500** over a term of **5** years. Interest is at 15% Annual Percentage Rate (APR) with regular monthly payments.

a. how much are her monthly payments?
b. what will be her total amount, **A**, paid back?
c. how much interest, **I**, does she pay for the loan?

$5\text{ yr} \cdot \frac{12\text{ mon}}{1\text{ yr}} = 60\text{ months!}$

[Show work ↓]

a) $23.795 \cdot 7{,}500/1{,}000 = \$178.46/\text{month}$

b) $\$178.46/\text{month} \cdot 60\text{ months} = \$10{,}707.60$ Total Amt paid

c) $\$10{,}707.60 - \$7{,}500 = \$3{,}207.60$ the Interest she paid.
A P I

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 Year Monthly
2%	$84.24	$42.54	$28.64	$21.70	$17.53	$9.20	$6
3%	$84.69	$42.98	$29.08	$22.13	$17.97	$9.66	$6
4%	$85.15	$43.42	$29.52	$22.58	$18.42	$10.12	$7
5%	$85.61	$43.87	$29.97	$23.03	$18.87	$10.61	$7
6%	$86.07	$44.32	$30.42	$23.49	$19.33	$11.10	$8
7%	$86.53	$44.77	$30.88	$23.95	$19.80	$11.61	$8
8%	$86.99	$45.23	$31.34	$24.41	$20.28	$12.13	$9
9%	$87.45	$45.68	$31.80	$24.89	$20.76	$12.67	$10
10%	$87.92	$46.14	$32.27	$25.36	$21.25	$13.22	$10
12%	$88.85	$47.07	$33.21	$26.33	$22.24	$14.35	$12
14%	$89.79	$48.01	$34.18	$27.33	$23.27	$15.53	$13
16%	$90.73	$48.96	$35.16	$28.34	$24.32	$16.75	$14
18%	$91.68	$49.92	$36.15	$29.37	$25.39	$18.02	$16

14% → 23.27
15% → 23.795
16% → 24.32

$\frac{(23.27 + 24.32)}{2} = 23.795$

17. Courtney takes a loan for **$7,500** over a term of **5** years. Interest is at 15% Annual Percentage Rate (APR) with regular monthly payments.

a. how much are her monthly payments?
b. what will be her total amount, **A**, paid back?
c. how much interest, **I**, does she pay for the loan?

Present Value	7,500	PV
Payments	-178.42	PMT
Future Value	0	FV
Annual Rate (%)	15	Rate
Periods	60	Periods
Compounding	Monthly	

We will use this App a lot in Grade 12 Applied.

If you want you can check it with an App on your phone or an on-line loan calculator

Have tried that EZ Financial App ?

use it a lot in Grade 12!

18. **Problem Solving**. The teacher says: "if you double my age and subtract 20, the answer is 84". How old is the teacher? ('*work backwards*' or '*guess and check*') algebra? draw it? logic? table?

[Show work ↓]

WORK Backwards (which is technically algebra!)

Un-Add the subtract 20, gives 104

Un-Double 104, gives (52.)

Check!

52·2 −20 = 84 ✓

Teacher is 52

Guess & Check!

Tchr	Agex2	Subtract 20	Equals 84?
×40?	80	60	No
×50?	100	100−20 80	No Close!
(52)?	52·2 104	104−20 84 ✓	Yes

↖ Teacher is 52 years old

Guess

Check

$40 \cdot 2 - 20$ ✗

$= 60$

$50 \cdot 2 - 20$ ✗

$= 80$

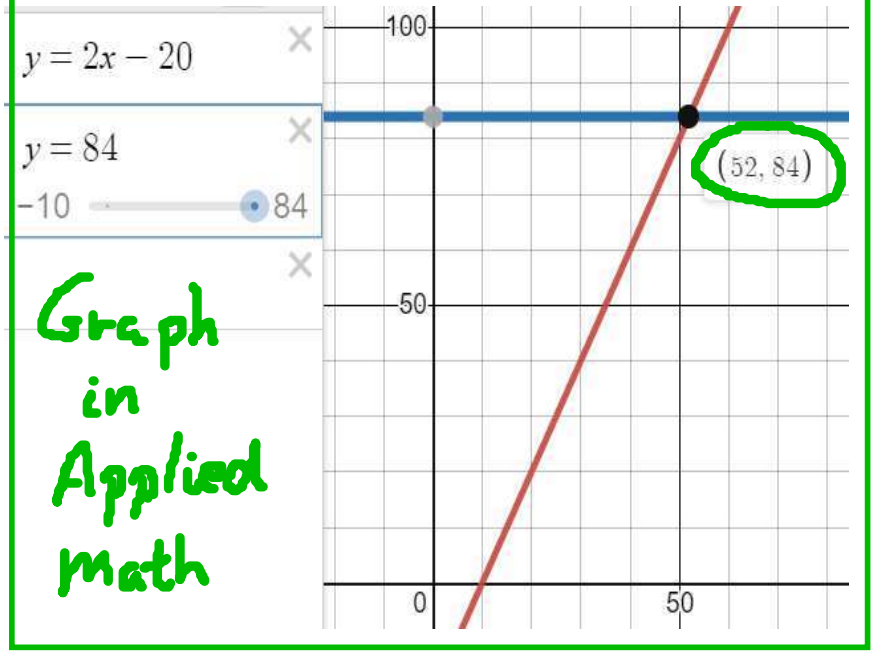
$52 \cdot 2 - 20$ ✗

$= 84$ ✓

$2x - 20 + 20 = 84 + 20$

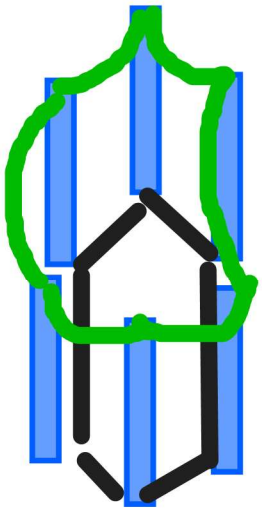
$\frac{2x}{2} = \frac{104}{2}$

$x = 52$

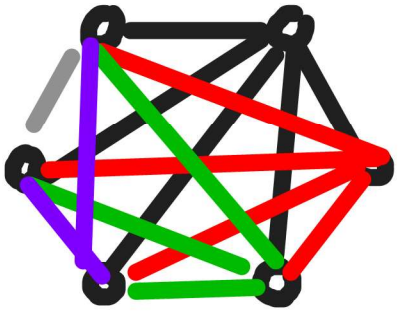


19. Mandie is having a birthday party. She wants to string up some streamers on her covered deck outside. The deck is a hexagon shape (plan view from the top). If she connects each corner of the deck to each corner with a single streamer, how many streamers will she need?

Draw it! Use formulae



Top view



Just draw and count!

5
4
3
2
1
---
15 streamers

in Grade 12 Applied you will learn a formula for this! It is just a button on your calculator!

20. Complete the Table for **Simple Interest**:

Interest **I** **[Units: $]**	**Principal** **P** **[Units: $]**	**Annual Percentage Rate** **r** **[% per year]**	**Time** **t** **[units: years]**
	$15, 000	8.5%	10 years

$I = P \cdot r \cdot t$

$I = \$15{,}000 \cdot 8.5/100 \cdot 10 = \$12{,}750$

20. Complete the Table for **Simple Interest**:

Interest I [Units: $]	Principal P [Units: $]	Annual Percentage Rate r [% per year]	Time t [units: years]
	$15, 000	8.5%	10 years
$ 200		6%	2 years
$ 60	$ 1, 000		3 months

20. Complete the Table for **Simple Interest**:

b) ~~$1,666.67~~

c) 24%

Interest I [Units: $]	Principal P [Units: $]	Annual Percentage Rate r [% per year]	Time t [units: years]
	$15, 000	8.5%	10 years
$ 200		6%	2 years
$ 60	$ 1, 000		3 months

b) $I = P \cdot r \cdot t$

$200 = P \cdot 6/100 \cdot 2$

$200 = 0.12 \cdot P$

$200/0.12 = P$, $P = \$1666.67$

Check: $200 = 1666.67 \cdot 6/100 \cdot 2$ ✓

c) $I = P \cdot r \cdot t$ (years)

$60 = 1000 \cdot r \cdot 3/12$

$60 = 250 \cdot r$

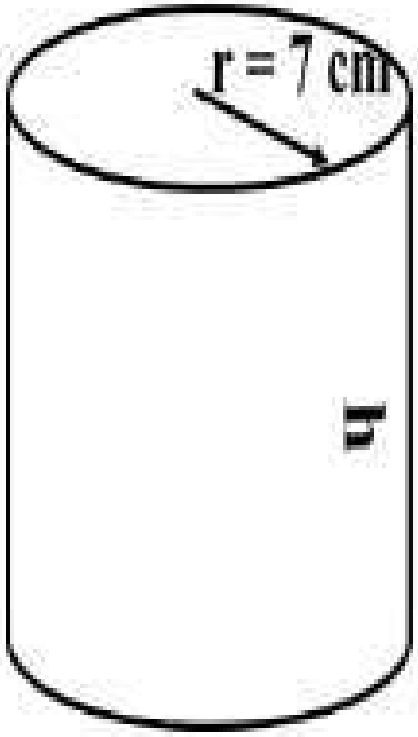
$r = 60/250 = 0.24 = 24\%$

Check:

$60 = 1000 \cdot 24/100 \cdot 3/12$? ✓

✓ Yes

21. The volume of the cylinder at right is 355 cm^3 (ie: 355 ml). What is its height? [Hint: work backwards]



not to scale

$$V_{cyl} = \pi r^2 \cdot h$$

$$\downarrow$$

$$355 = \pi \cdot 7^2 \cdot h$$

$$355 = 153.93804 \cdot h$$

$$\frac{355}{153.93804} = h$$

$$h = 2.30612\ldots$$

$\approx$ 2.31 cm high

Checks

Check: $\pi \cdot 7^2 \cdot 2.31 =$ [redacted]

Tomorrow's RESCUE Test will bear considerable resemblance to several of these questions we have practiced the last few days!