MrF

GRADE 11 ESSENTIAL
MID-TERM PRACTICE QUESTIONS

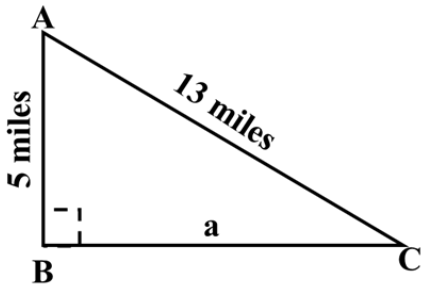
- Use your single 8 ½ in by 11 in Reference Notes
- Use a calculator to its full effect unless otherwise indicated
- Show work. Show units.
- Check answer: Reasonable?, units work out?, 'plug back in', round and check(estimate).
- Round decimal answers to nearest 0.01 unless otherwise indicated.
- Conversion tables, templates and formulae will be provided

1. **Loans**. Andrew takes a loan for $2,800 at an Annual Percentage Rate (APR) rate of 30% (*silly*!!!) from the furniture store to buy a living room suite. He makes monthly payments for 3 years.

a. how much are Andrew's monthly **payments**?
b. how much **total** will Andrew pay for his furniture with this financing arrangement?
c. how much **interest** does Andrew eventually pay on his loan?

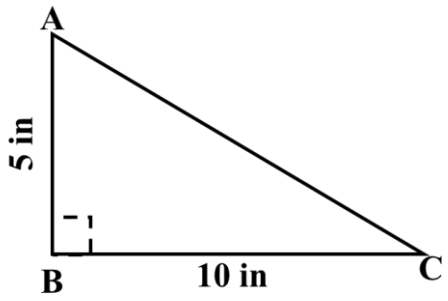
[Show work ↓]

2. What is the measure of side a?

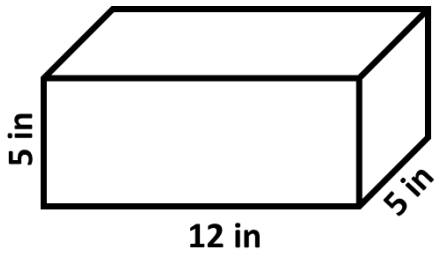


3. **Geometry**. What is the Area and Perimeter of this triangle?

a. Perimeter: _____
b. Area: _____
[Show work ↓]



4. **Geometry**. For the *rectangular prism* at right; what is the value of the **Surface Area** (SA)?
[Show work ↓]



How much paper would it take to wrap this present for the nice teacher?

5. Emerald invests some recent inheritance in a bank account (an RESP: Registered Education Savings Plan) paying 8.5% Annual Percentage Rate *compounded* **monthly** to help pay for her daughter's college when she gets older. She deposits **$4,000** in the account and lets it grow for **18** years.

a. What is the value of the investment after **18** years?
b. Using the Rule of 72, approximately how long should it have taken to double the principal investment? (check it?)

[Show work ↓]

6. Why does a compound interest investment (or loan) pay (or cost) more interest than does a simple interest investment (or loan) after more than one payment period? (Full sentence reply)

7. **Problem Solve**.

a. What is the sum (add them all up) of all the counting numbers from 1 to 20? [Show work ↓]

b. What is the sum of all the numbers from 1 to 100?

c. [Tricky] What is the sum of all the numbers from 1 to 99?

8. Corrine borrows $4,000 at a rate of 10% APR compounded semi-annually for a year and a half. Using the simple interest formula for each period, calculate recursively (step by step, period by period) her investment and its value at the end of the investment term. [Complete the table]

P	% Annual APR	% for Period	$;Interest For Period	A; Total For End of Period	End of Period
$4,000	10%	5%	$200	$4,200	1 (6 months)
					2 (12 months)
					3 (18 months)

[work area if needed↓]

Now check it using the compound interest formula.

How many rows would you need to calculate if you had done this for 10 years?

9. **Problem Solve**. Travis went to the furniture store to get a dining suite and bought **4 chairs** and a **table** for **$500** dollars. Emerald says *she* bought the *same dining suite* but she got **6 chairs** and **a table** for **$650**. How much does one chair cost?
[Show work ↓]

10. **Rule of 72**

a. At what interest rate (approximately) would I need to leave a compounding interest investment in the bank to double my money if my interest is compounded regularly for 18 years?

b. Why does the Rule of 72 not include the compounding frequency; the '**s**'?

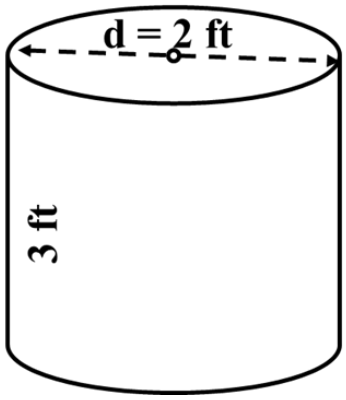
[Show work ↓]

11. **Fractions**. Calculate and simplify by any method: $\left(\frac{3}{8} * \frac{1}{2}\right) * \frac{3}{4} + 4$

12. **Fractions**. Fractions are not really an Essential Stream learning outcome but they are seriously useful! Simplify the following fractions manually (no calculator). Draw pizzas or birthday cakes!

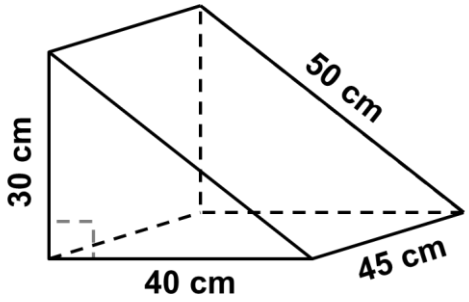
a. Half of a half of a pizza $\frac{1}{2} * \frac{1}{2} =$	b. One part out of every eight of two whole pizzas $\frac{1}{8} * 2 =$	c. $\frac{3}{4} * \frac{1}{4} =$
d. $2\frac{1}{2} * 3\frac{1}{2} =$	e. $2\frac{1}{2} + 1\frac{1}{4} =$	f. $3\frac{3}{8} + 5\frac{3}{4} =$
Invent your own here	Invent your own here	Invent your own here

13. Calculate the Surface Area (SA) **and** the Volume of the Right Cylinder



SA: _____ Vol = _____
[Show work ↓]

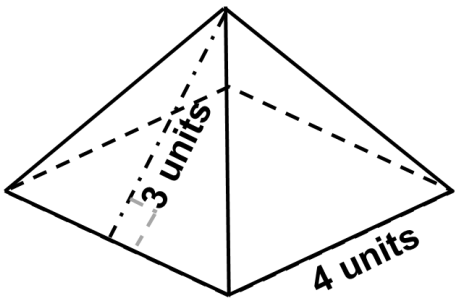
14. Calculate the Surface Area and Volume of the Triangular Prism.



SA: _____ Vol: _____
[Show work ↓]

15. Nets of 3-D Objects

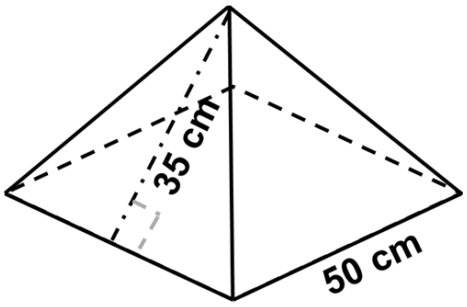
a. Draw the net of the Square Pyramid



b. Calculate (*or* count) its Surface Area

SA: _____ _____

16. Calculate the Surface Area of the Square Pyramid.



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?

[Show work ↓]

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

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*’)

[Show work ↓]

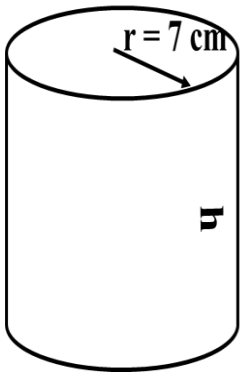
19. Mandie is having a birthday party. She wants to string up some streamers on her covered deck outside. The deck is a hexagon shape (plan view from the top). If she connects each corner of the deck to each corner with a single streamer, how many streamers will she need?

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

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



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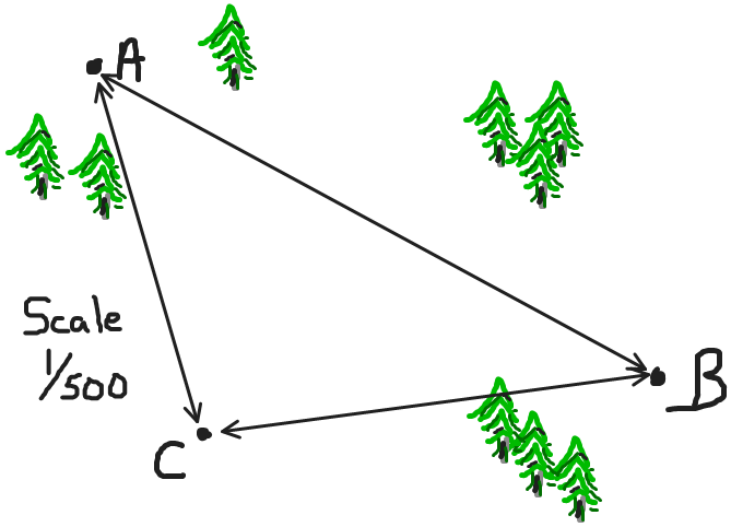
22. Solve the proportions:

$\frac{1}{4} = \frac{x}{8}$	$\frac{1}{4} = \frac{x}{10}$
$\frac{3}{8} = \frac{x}{30}$	$\frac{1}{5} = \frac{7}{x}$
5 bananas for \$6; so 75 bananas cost \$ __x___ $\frac{5}{6} = \frac{75}{x}$	You invent one here.

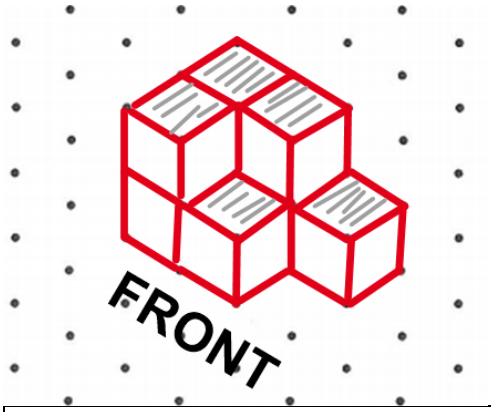
23. **Scale**. If the scale of a map is 1:50,000 (or $^{1}/_{50,000}$) then 1 **cm** on the map is the same as how many **km** actual?

24. Here is a map of a community from Google Earth that you printed. The scale is **1:500**. [You will need a ruler for this question or if you want you could 'eyeball it']

a. How far is it from Place A to place B in metres.
b. How tall is an actual tree?



25. Draw the three orthographic views of this 3-D object. The top view, the front view (front elevation), and the side view (side elevation)



FRONT ELEVATION	SIDE ELEVATION
TOP (PLAN) VIEW	

26. Perform the following calculations manually [show work]

a. 566 * 17	b. 723 ÷ 9 decimal answer: ____ fraction answer: _____

MULTIPLE CHOICE
Circle the single **best** and/or **closest** answer

1. Two of what number multiplied together is 81?

   a. 6561 b. 9 c. impossible d. IDK

2. If 3x = 19, the x has a value of:

   a. anything is possible b. $6\frac{1}{3}$ c. 6.3 d. IDK

3. Joe had half of a pizza remaining, his friend then ate one third of that! How much pizza does Joe have remaining now?

   a. one third of a pizza b. no pizza remains
   c. one half of a pizza d. one quarter of a pizza

4. If $\frac{x}{4} = 13$; what is the value of x?

   a. 3.25 b. 3 ¼ c. 52 d. none of these

5. A cylinder has a radius of 6 cm and a height of 10 cm. Its volume is:

   a. 1131 cm b. 1131 cm^2 c. 1130 cm^3 d. 4500 cm^3

6. The formula for scale is:

a. $\frac{map\ length}{actual\ length}$ b. $\frac{map}{model} * 100$

c. $\sqrt{\frac{model}{gronks}}$ d. $\frac{-b \pm \sqrt[2]{b^2-4ac}}{2a}$

7. The Pythagorean theorem to calculate the sides of a right triangle given any two sides is:

a. a + b = c; where a and b are the longest sides

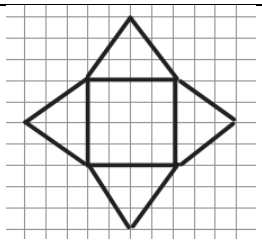
b. $c^2 = ab^2$; where c is the longest side

c. the sum of the squares of the shorter two sides equals the square on the hypotenuse; ie: $a^2 + b^2 = c^2$; where a and b are the lengths of the shorter two sides and c is the length of the hypotenuse.

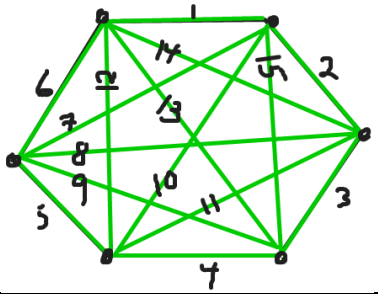
d. Area = $\frac{1}{2}bh$; where h is the hypotenuse.

ANSWERS

These answers use the best value of π on a calculator
It is possible, but unlikely, that there will be an incorrect answer here.

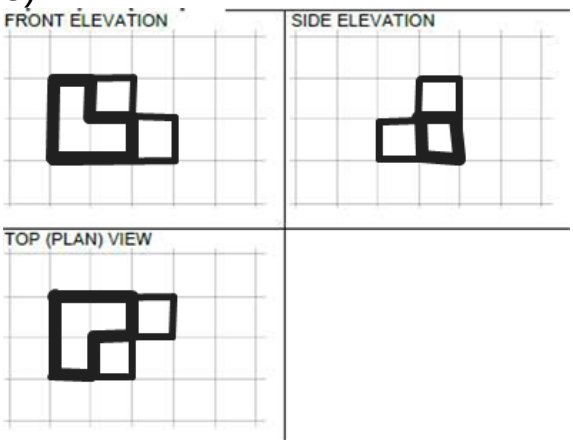
1a) $118.86	b) $4,278.96	c) $1,478.96	
2) 12 miles			
3a) 26.18 in	b) 25in^2		
4) 290 in^2			
5a) $18,373.35	b) $\cong$ 8.7 years		
6) Compound interest is better because you earn interest on the interest you have already earned in a previous period.			
7a) 210	b) 5050	c) 4950	
8 Final value Amount is $4630.50 done recursively. Same using the Compound interest formula. If we had done 10 years, then it would take 20 rows of calculation (two rows per year), that is why we invented the formula!			
9) Use Guess and Check (or really fancy algebra if you know how to do Systems of Equations). One chair costs $75, one table costs $100.			
10a) $\cong$4%	b) The compounding period has a fairly minor effect on the final amount value of an investment for short terms and/or low interest rates. Eg : $2, 000 monthly at 5% for 10 years= $3294 $2, 000 annually at 5% for 10 years= $3257		
11) $4\frac{9}{64}$; certainly not 4.140625			
12) a. ¼ b. ¼ c. 3/16 d. $8\frac{3}{4}$ e. $3\frac{3}{4}$ f. $9\frac{1}{8}$			
13a) 25.13 ft^2	b) 9.42 ft^3		
14a) 6600 cm^2 or 0.66 m^2		b) 27,000 cm^3 or 0.027 m^3	
15a)  b) 40 unit^2			
16) 3750 cm^2			
17a) payments $178.50 monthly b) $10,710 Total Paid back c) $3,210 paid in Interest			
18) Guess and Check *or* Work Backwards. The teacher is 52. Check: 2*52 – 20 = 84 ☺			

19) Draw it! Or look for a pattern. 15 Streamers



20a) $12,750	b) $1,666.67	c) 24%	
21) h = 2.31 cm			
22a) 2	b) 2.5	c) 11.25	d) 35
e) 75 bananas cost $90			
23) 500 m or 0.5 km			
24a) 41 metres	b) 5 m		

25)



26a) 9622	b) 80.33333333… or $8\frac{1}{3}$

MULTIPLE CHOICE

1) b. 2) b. 3) a. 4) 52 5) 1130 cm^3

6) a. 7) c.