



# Grade 10 Essential Quiz Debrief Week 3

23-09-21

MrF

Check out the time stamps!!

**GRADE 10 ESSENTIAL  
QUIZ WEEK 3 – 23-09-21**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Instructions: (standard instructions)**

- **Closed Book.** Use your single sheet course reference notes 'cheat sheet' that you are preparing. Use mine for now.
- **Show work** for best mark.
- Unit Conversion factors have been provided.
- Round decimal answers to the nearest hundredth (0.01)
- Each individual question is worth two marks unless otherwise indicated.
- Tick here:  if you read these instructions (one mark)

1. Debi is 24 years old. She works 30 hours a week while in College. Her rate of pay is \$16.50/hour. She had 25 hours of **regular pay** and 5 hours of **overtime pay** at '*time and a half*'. She earned a **commission** of 5% of the \$2,600 worth of items she sold this week. Her cat is 6 months old.

She pays 8% of her Taxable Income to the Federal Government and 12% to the Provincial Government.

She has \$25/week put into a Registered Retirement Saving Plan (RRSP) by her payroll department which is untaxed. She pays 4.95% of her gross pay into the government retirement plan (CPP). And she has 1.89% of her gross deducted for Employment Insurance (EI).

She pays \$12 a week for parking that is deducted from her pay.

**Calculate** her Net Pay by **completing** a Net Pay Template. (10 marks)

OMG!  $\Rightarrow$



1. Debi is 24 years old. She works 30 hours a week while in College. Her rate of pay is \$16.50/hour. She had 25 hours of **regular pay** and 5 hours of **overtime pay** at 'time and a half'. She earned a **commission** of 5% of the \$2,600 worth of items she sold this week. Her cat is 6 months old.

Did this quite a few times!

She pays 8% of her Taxable Income to the Federal Government and 12% to the Provincial Government.

She has \$25/week put into a Registered Retirement Saving Plan (RRSP) by her payroll department which is untaxed. She pays 4.95% of her gross pay into the government retirement plan (CPP). And she has 1.89% of her gross deducted for Employment Insurance (EI).

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Calculate her Net Pay by completing a Net Pay Template. (10 marks)

<b>Regular Pay</b>	Regular →	\$ 412.50	← Formula Pay Rate X Hours $= \$16.50/hr \cdot 25 hr$
<b>O/T Pay</b>	→	\$ 123.75	$(\$16.50/hr \cdot 1.5) \cdot 5 hr$
<b>Commission</b> (% of sales)		130.00	$= 5/100 \cdot 2,600$
<b>GROSS INCOME =</b>		666.25	GROSS
<b>Non-Taxable Deductions ↓:</b>			Now what comes off?
<b>- RRSP Contribution</b>		- \$25.00	If you save \$25/wk for 45 years you would have \$300,000 when retire!
<b>- Union Dues</b>		- 0.00	
<b>- Company Pension Contribution</b>		- 0.00	If you work for a company or government that has a company pension plan that is another pot of retirement money
<b>TAXABLE INCOME =</b>		\$ 641.25	use this to calculate taxes

<b>TAXABLE INCOME =</b>	<b>641.25</b>	
<b>Income Taxes ↓:</b>		
-Taxes Provincial @ <u>8</u> %		Tax rate(s) X Taxable Income
-Taxes Federal @ <u>12</u> %	-128.25	$20/100 \cdot 641.25$
<b>Taxable deductions ↓</b>		
-CPP Contribution ___ %	- 32.98	% of <u>Gross Income</u> <sup>!!!</sup> $4.95/100 \cdot 666.25$
-EI Contribution ___ %	- 12.59	% of <u>Gross Income</u> $1.89/100 \cdot 666.25$
-Parking	- 12.00	
-Coffee Fund	- 0.00	
-Charity Donation	- 0.00	
<b>Total Income Tax and Taxable deductions</b>		
<b>NET PAY:</b>	<b>455.43</b>	<u>Weekly?</u> Bi-Weekly? Monthly?



2. Allyssa worked the following hours last week:

M	T	W	Th	F	SA	Su
8	6	10	0	10	8	5

Her *regular* rate of pay is **\$14.25** / hour. She gets overtime rate of pay of 'time-and-a-half', 1.5 times her regular pay, after **8** hours in any day.

Calculate Allyssa's **Gross** Pay for the week. (4 marks)

$$\begin{array}{r}
 \text{Reg} \\
 \text{O/T}
 \end{array}
 \begin{array}{ccccccc}
 \text{M} & \text{T} & \text{W} & \text{Th} & \text{F} & \text{Sa} & \text{Su} \\
 8 & 6 & 8 & 0 & 8 & 8 & 5 \\
 0 & 0 & 2 & 0 & 2 & 0 & 0
 \end{array}
 = \begin{array}{l}
 43 \text{ regular hours} \\
 4 \text{ overtime hours}
 \end{array}$$

$$\begin{array}{l}
 \text{Pay:} \\
 \text{Reg} \\
 \text{O/T}
 \end{array}
 \begin{array}{l}
 \$14.25/\text{hr} \cdot 43 \text{ hr} \\
 (\$14.25/\text{hr} \cdot 1.5) \cdot 4
 \end{array}
 = \begin{array}{l}
 \$612.75 \\
 \$85.50 \\
 \hline
 \$698.25 \text{ Gross} \\
 \text{Income}
 \end{array}$$

**Allyssa's Gross weekly pay is \$698.25**

3. Convert the following (use the unit factor method preferably):

a. 7.3 kilometres [km] = x metres [m]

b. 750 milligrams [mg] = \_\_\_\_\_ grams

a. Proportions

$$\frac{x \text{ m}}{7.3 \text{ km}} = \frac{1000 \text{ m}}{1 \text{ km}}$$
$$x = \frac{7.3 \text{ km} \cdot 1000 \text{ m}}{1 \text{ km}}$$
$$x = \boxed{7,300 \text{ m}}$$

UNIT Factor

$$7.3 \text{ km} \cdot \frac{1000 \text{ m}}{1 \text{ km}} = \boxed{7,300 \text{ m}}$$

b. Proportions

$$\frac{x \text{ g}}{750 \text{ mg}} = \frac{1 \text{ g}}{1000 \text{ mg}}$$
$$x = \frac{750 \text{ mg} \cdot 1 \text{ g}}{1000 \text{ mg}}$$
$$x = \boxed{0.75 \text{ g}}$$

Unit Factor  
Method:

$$750 \text{ mg} \cdot \frac{1 \text{ g}}{1000 \text{ mg}} = \boxed{0.75 \text{ g}}$$

3. Convert the following (use the unit factor method preferably):

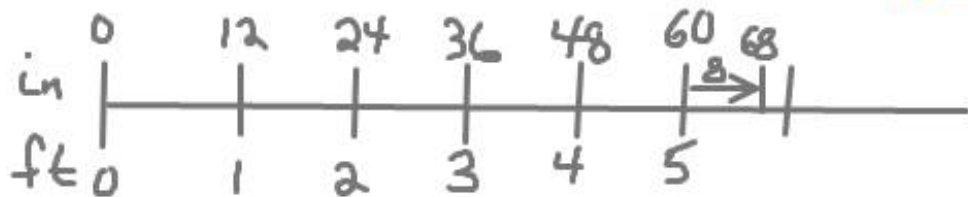
c. 68 inches [in] = 5 ft 8 in

5'8"

d. Terry is exactly 23 years old. How many seconds has she lived so far?

c)  $68 \text{ in} \cdot \left( \frac{1 \text{ ft}}{12 \text{ in}} \right) = \frac{68}{12} = 5 \text{ ft and } 8 \text{ in}$   
 $= \boxed{5 \text{ ft } 8 \text{ in}}$

$$\begin{array}{r} 5 \text{ ft} \\ 12 \overline{)68} \\ \underline{-60} \\ 8 \text{ in} \\ \text{left over} \end{array}$$



68 in = 5 whole feet  
and 8 inches left over

d)

If lots of conversions, just use the Conversion Factor Method

$$\begin{aligned} & \cancel{23 \text{ years}} \cdot \left( \frac{\cancel{365 \text{ days}}}{\cancel{1 \text{ yr}}} \right) \cdot \left( \frac{\cancel{24 \text{ hr}}}{\cancel{1 \text{ days}}} \right) \cdot \left( \frac{\cancel{60 \text{ min}}}{\cancel{1 \text{ hr}}} \right) \cdot \left( \frac{\cancel{60 \text{ sec}}}{\cancel{1 \text{ min}}} \right) \\ & = 23 \cdot 365 \cdot 24 \cdot 60 \cdot 60 = \boxed{725,328,000 \text{ seconds}} \end{aligned}$$

Seven Hundred TWenty Five Million, Three Hundred Twenty Eight Thousand



MRF

4. Solve the proportions for the unknown amount:

"Isolate" the unknown,  
"Cross-multiply"

a.  $\frac{8}{5} = \frac{n}{30}$

$\frac{8}{5} = \frac{n}{30}$

Check!  
 $30 \cdot 8 = 5 \cdot 48?$   
 $240 = 240 \checkmark$  Yes

$\frac{8 \cdot 30}{5} = n$  ;  $n = 48 \checkmark$

c.  $\frac{8}{5} = \frac{14}{x}$  (Hint: 'flip')

$\frac{5}{8} = \frac{x}{14}$

$x = \frac{5 \cdot 14}{8} = 8.75$

Check!?  
 $5 \cdot 14 = 8 \cdot 8.75?$   
 $70 = 70 \checkmark$  Yes

b.  $\frac{5}{12} = \frac{n}{6}$  "Cross Multiply"

$\frac{5 \cdot 6}{12} = n$  ;  $n = \frac{30}{12} = 2.5 \checkmark$

check: ?  
 $5 \cdot 6 = 12 \cdot 2.5?$   
 $30 = 30 \checkmark$  Yes

d. If 5 bananas cost \$7, then calculate how much 22 bananas will cost?

$\frac{\$7}{5 \text{ bananas}} = \frac{\$x}{22 \text{ bananas}}$  ISOLATE The x

$x = \frac{\$7 \cdot 22 \text{ bananas}}{5 \text{ bananas}}$

$x = \$30.80$  for 22 bananas  
 $7 \cdot 22 = 5 \cdot 30.80 \checkmark$  Sounds about right!

**5. Problem Solving.** Mike has four friends. His mom says he is allowed to invite over **only three** of the four for a party. Determine *how many different* groups of friends Mike can possibly invite. [Hint: make a list]

Friends: A B C D

ABC  
ABD  
ACD  
BCD

Is that it just four?

select a group of three

A	B	C	D	
✓	✓	✓	✗	ABC
✓	✓	✗	✓	ABD
✓	✗	✓	✓	ACD
✗	✓	✓	✓	BCD

↑  
4 different groups

Logic? How many ways can leave out one friend

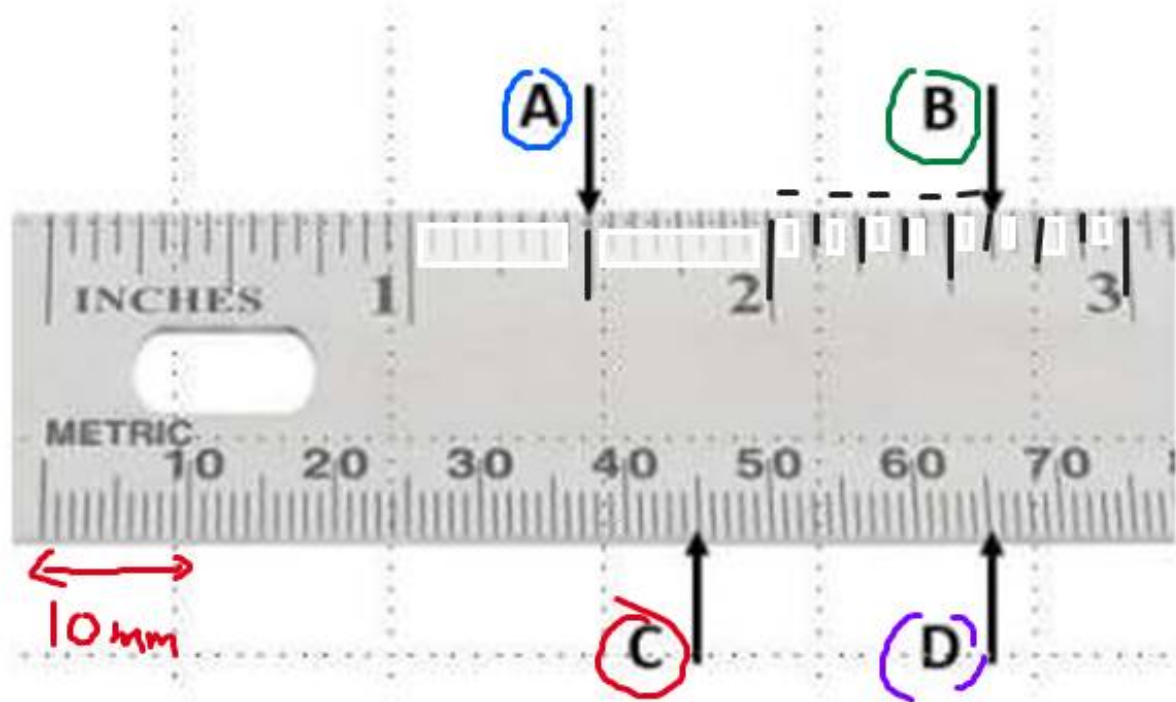
2 select 1 = 2 ways  
3 select 2 = 3 ways  
4 select 3 = 4 ways  
5 ✓ 4 = 5  
6 select 5 = 6

$\binom{A B C}{D}$   
or  $\binom{A B C D}{D}$

See a pattern, see a method you like, have you a different way to solve?

There's a button on your calculator does this btw





6. State the measure indicated by

A:  $\frac{1\frac{1}{2}''}{\quad}$

B:  $\frac{2\frac{5}{8}''}{\quad}$

C:  $\frac{45\text{ mm}}{\quad}$  (4.5 cm)

D:  $\frac{65\text{ mm}}{\quad}$  (6.5 cm)

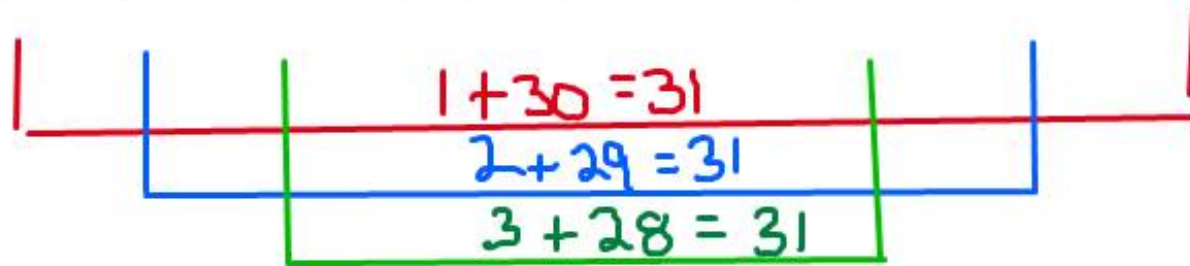
2 whole inches  
plus 5 pieces  
of an 8 piece  
inch  
 $= 2'' + \frac{5}{8}''$   
 $= 2\frac{5}{8}''$



## Bonus Questions

Determine the sum (ie: add them all up) of all the counting numbers from 1 to 30.

$$1 + 2 + 3 + \dots + \text{etc} + 28 + 29 + 30$$



Done this pattern a few times!

See a ?? pattern??

How many 31's if we pair up the ? outside working in.  
15

$$31 \cdot 15 = \textcircled{465} \text{ l.o.l}$$

A couple other ways to think about it too!

```
1+2+3+4+5+6+7+8+
9+10+11+12+13+14
+15+16+17+18+19+
20+21+22+23+24+2
5+26+27+28+29+30
465
```

**Manually Multiply:** Show work using the standard algorithm

$$27 \times 55 =$$

$$\begin{array}{r} +3 \\ 27 \\ \times 55 \\ \hline 135 \\ 135\text{-} \\ \hline 1,485 \end{array}$$

Just Bonus!  
You do not lose marks!!  
 $2.15 \cdot 66 =$

$$\begin{array}{r} +3 \\ 2.15 \\ \times 66 \\ \hline 1290 \\ 1290\text{-} \\ \hline 141.90 \\ \hline \boxed{141.9} \end{array}$$

Sort of critical skill, really, doing these manually. Someday your nephew or your kid will ask you!!

See your teacher if you want some extra study packages (after you learn your times tables)

**Manually Divide:** Show work using the standard algorithm.

$$350 \div 14$$

$$\begin{array}{r} 25 \\ 14 \overline{) 350} \\ \underline{-28} \phantom{0} \downarrow \\ 70 \\ \underline{-70} \\ 0 \end{array}$$

$$2 \cdot 14$$

$$4 \cdot 14 = 56$$

$$5 \cdot 14 = 70 \rightarrow$$

0 remainder  
done!

$$350 \div 14 = 25$$

Check!

$$\begin{array}{r} 25 \\ \times 14 \\ \hline 100 \\ 25 \phantom{0} \\ \hline 350 \end{array} \checkmark$$

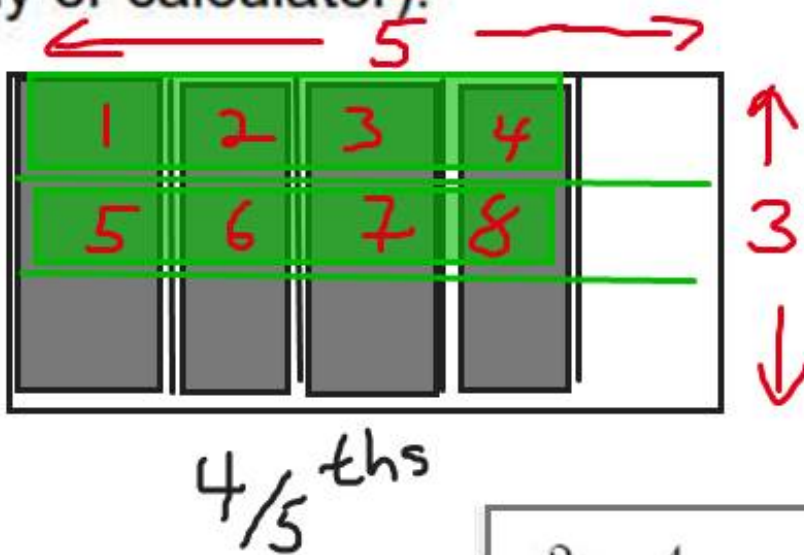
You may want to learn this some day?



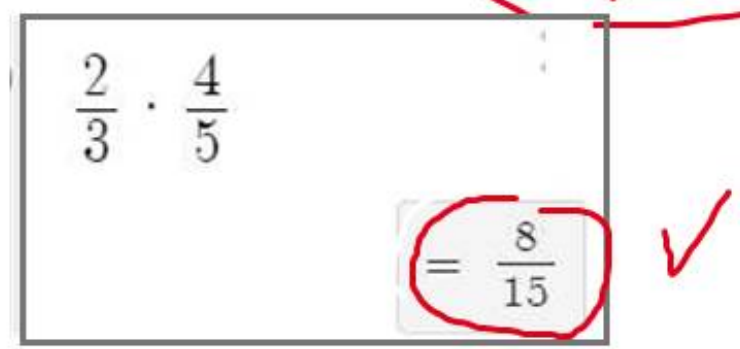
**Simplify** (Manually or calculator):

$$\frac{2}{3} * \frac{4}{5} =$$

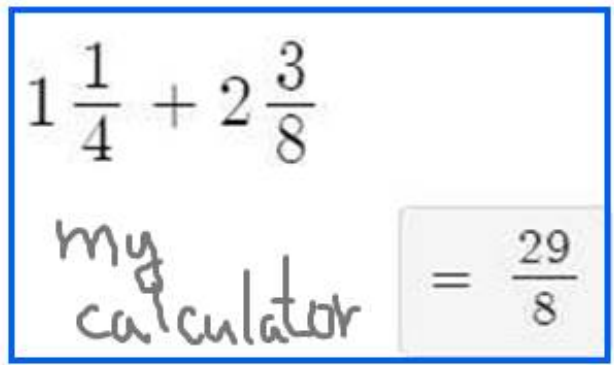
$2/3$  rds



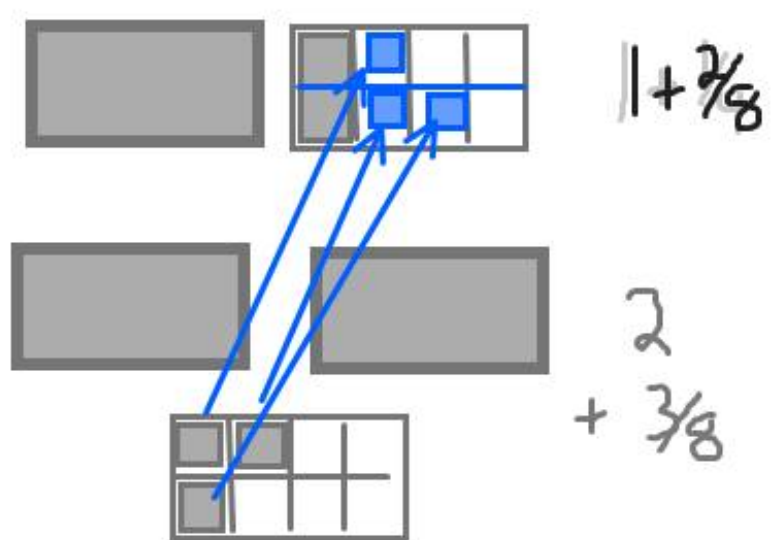
8 pieces out of 15  
 $= \frac{8}{15}$  ths



$$1\frac{1}{4} + 2\frac{3}{8} = 1 + \frac{2}{8} + 2 + \frac{3}{8} = 3 + \frac{5}{8} = \left(3\frac{5}{8}\right)$$



$= 8 \sqrt[3]{29}$   
 $3\frac{5}{8}$



***That is it!***

***A quick quiz on the first two and a half weeks (two and five tenths, 2.5) of classes.***

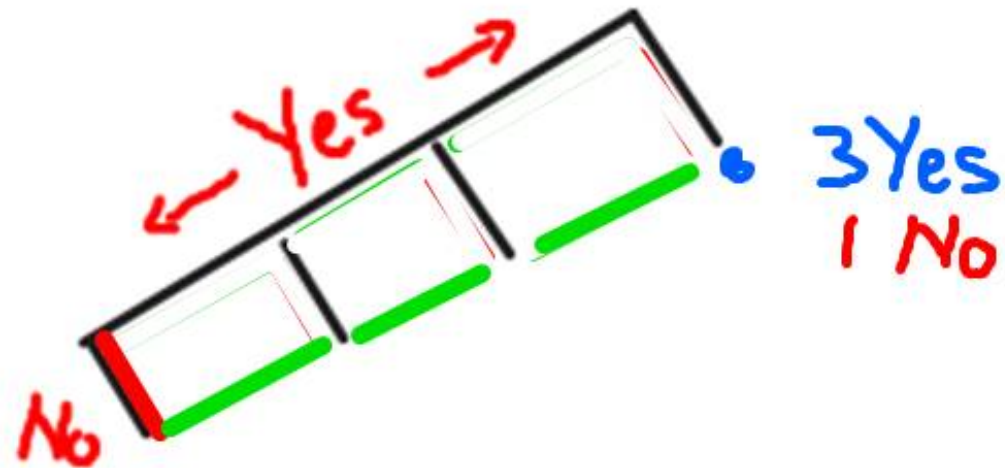
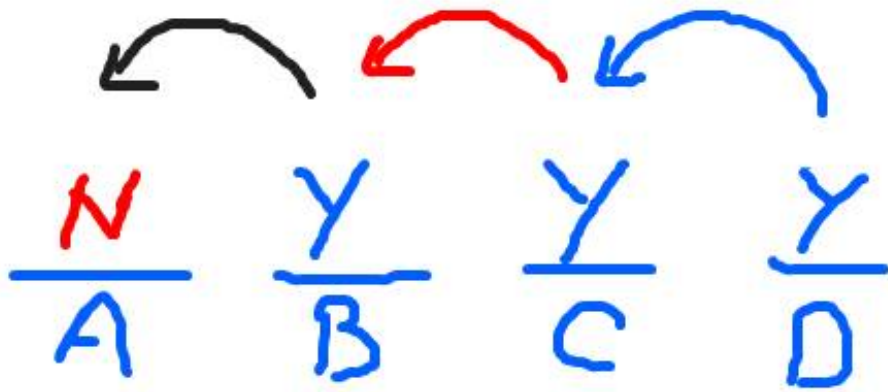
***A bit of problem solving by **some type** of thinking...***

***A bit of throwback to Middle School fractions for **bonus points** just to see who may want to refresh fractions since they are rather easy if you draw them (and if you know the times tables)***

***Nail down times tables though! An important project for the next two weekends!***



**Or maybe you were sort of thinking like this?**



**Even if you did not guess the answer, trying is a good step forward!**