<u>Grade 6 – Book C</u>

(CAPS edition)

Teachers Guidelines

Revised for 2023

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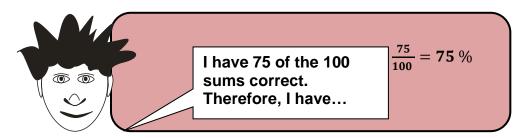
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CHAPTER 1 C1

C1.1 Percentages



Percentages are another way of writing fractions with a denominator of 100. The word 'percentage' is derived from the Latin word 'per centum' which means 'per hundred'

Exercise 1:

Date :

(1) Write the following fractions as percentages...

(HINT: The denominator must be '100'.)

$$(a)\frac{23}{100} =$$

$$(b)\frac{60}{100} =$$
 60%

$$(c)\frac{75}{100} =$$

$$(d)\frac{78}{100} =$$
 78%

$$(d)\frac{120}{100} = \underline{\qquad 120\%}$$

$$(a)\frac{23}{100} = 23\% \qquad (b)\frac{60}{100} = 60\% \qquad (c)\frac{75}{100} = 75\%$$

$$(d)\frac{78}{100} = 78\% \qquad (d)\frac{120}{100} = 120\% \qquad (d)\frac{9}{100} = 9\%$$

Study the factors of 100.

$$10 \times 10 = 100 / 5 \times 20 = 100 / 4 \times 25 = 100 / 2 \times 50 = 100$$

(2) Rewrite the denominator as '100' and then as a percentage.

FRACTIONS	REWRITE WITH A DENOMINATOR OF '100'	PERCENTAGE
8 10	$\frac{8}{10} \times \frac{10}{10} = \frac{80}{100}$	80% EXAMPLE
$(a)\frac{2}{10}$	$\frac{2}{10} \times \frac{10}{10} = \frac{20}{100}$	20 %
$(b)\frac{4}{5}$	$\frac{4}{5} \times \frac{20}{20} = \frac{80}{100}$	80 %
$(c)\frac{12}{20}$	$\frac{12}{20} \times \frac{5}{5} = \frac{60}{100}$	6 0 %
$(d)\frac{20}{25}$	$\frac{20}{25} \times \frac{4}{4} = \frac{80}{100}$	80 %
$(e)\frac{3}{4}$	$\frac{3}{4} \times \frac{25}{25} = \frac{75}{100}$	75 %

MIXED OPERATIONS

Exercise 1A:		Date :				
(1) Write down the correct answers.						
a) R100 + R150 x 3 =	R550	a) 10 x R12,40 =	R124,00			
b) R200 + R150 x 6 =	R1 100	b) 6 x 90c =	R5, 40			
c) R45,20 x 10 + R100 =	R552,00	c) R14 + R7 x 8 =	R70,00			
d) 2 x (R12,50 + R4,20) =	R33,40	d) 3(6 x 15c) =	R2,70			
e) (2 x R5) + (2 x R3) =	R16	e) 2 x R90 – R30 =	R150			
f) R100 + R24,20 x 2 =	R148,40	f) R3 450 x 10 =	R34 500			
g) 2 x (R2,50 + R1,30) =	R7,60	g) R12, 20 x 20 =	R244,00			
h) 5 x R125 + R75 =	R700	h) R60 + R350 ÷ 7 =	R110			
i) R40 + R60 x 2 =	R160	i) R15 x 6 =	R90			
j) 7 x R25 +R125 =	R300	j) R 1000 ÷ 8 =	R125			
Total:						
Total out of 20						

$(f)\frac{1}{4}$	$\frac{1}{4} \times \frac{25}{25} = \frac{25}{100}$	25 %
$(g)\frac{15}{20}$	$\frac{\frac{15}{20} \times \frac{5}{5} = \frac{75}{100}}{}$	75%

PETROL PRICE IN 1995	INCREASE	PETROL PRICE IN 2018
R 5,00	100%	R 10,00
R 5,00	200%	R 15,00

(3) Convert to an improper fraction and write as a percentage.

FRACTIONS	WRITE AS AN IMPROPER FRACTION WITH '100' AS DENOMINATOR	PERCENTAGE
$1\frac{2}{10}$	$\frac{12}{10} \times \frac{10}{10} = \frac{120}{100}$	120% EXAMPLE
$(a)2\frac{4}{10}$	$\frac{24}{10} \times \frac{10}{10} = \frac{240}{100}$	240%
$(b)1\frac{8}{10}$	$\frac{18}{10} \times \frac{10}{10} = \frac{180}{100}$	180%
$(c)1\frac{1}{5}$	$\frac{6}{5}$ x $\frac{20}{20} = \frac{120}{100}$	120%
$(d)1\frac{5}{25}$	$\frac{30}{25} \times \frac{4}{4} = \frac{120}{100}$	120%
$(e)2\frac{2}{25}$	$\frac{52}{25} \times \frac{4}{4} = \frac{208}{100}$	208%
(f) 1	$\frac{1}{1} \times \frac{100}{100} = \frac{100}{100}$	100 %
(g) 2	$\frac{2}{1} \times \frac{100}{100} = \frac{200}{100}$	200%
(h) 3	$\frac{3}{1} \times \frac{100}{100} = \frac{300}{100}$	300%

		_
		_

C1.2 Simplifying and converting percentages:

Exercise 2: Date :

(1) Write the percentages as fractions with the denominator of '100' and simplify.

PERCENTAGE	FRACTION	CALCULATIONS
25 %	25 100	$\frac{25}{100} \div \frac{25}{25} = \frac{1}{4}$
a) 10%	10 100	$\frac{10}{100} \div \frac{10}{10} = \frac{1}{10}$
b) 75%	75 100	$\frac{75}{100} \div \frac{25}{25} = \frac{3}{4}$
c) 80%	100	$\frac{80}{100} \div \frac{20}{20} = \frac{4}{5}$
d) 45%	45 100	$\frac{45}{100} \div \frac{5}{5} = \frac{9}{20}$
e) 15%	15 100	$\frac{\frac{15}{100} \div \frac{5}{5} = \frac{3}{20}}{}$
f) 12%	12 100	$\frac{12}{100} \div \frac{4}{4} = \frac{3}{25}$
g) 60%	<u>60</u> 100	$\frac{60}{100} \div \frac{20}{20} = \frac{3}{5}$
h) 120%	120 100	$\frac{\frac{120}{100} \div \frac{20}{20} = \frac{6}{5} = 1\frac{1}{5}$
i) 90%	90 100	$\frac{90}{100} \div \frac{10}{10} = \frac{9}{10}$
j) 28%	<u>28</u> 100	$\frac{28}{100} \div \frac{4}{4} = \frac{7}{25}$
k) 36%	36 100	$\frac{36}{100} \div \frac{4}{4} = \frac{9}{25}$
l) 5%	<u>5</u> 100	$\frac{\frac{5}{100} \div \frac{5}{5} = \frac{1}{20}}{}$
m) 66%	<u>66</u> 100	$\frac{\frac{66}{100} \div \frac{2}{2} = \frac{33}{50}}{}$
n) 70%	70 100	$\frac{70}{100} \div \frac{10}{10} = \frac{7}{10}$
o) 68%	68 100	$\frac{68}{100} \div \frac{4}{4} = \frac{17}{25}$
p) 30%	30 100	$\frac{30}{100} \div \frac{10}{10} = \frac{3}{10}$

_		
-		

Exercise 3: Date :

(1) Write the common fractions as decimal fractions and as percentages.

. FRACTIONS	DECIMAL FRACTIONS	PERCENTAGES EXAMPLE 60%
$\frac{60}{100}$	0,6	60% EXAM
$(a)\frac{25}{100}$	0,25	25%
$(b)\frac{75}{100}$	0,75	75%
$(c)\frac{90}{100}$	0,90	90%
$(d)\frac{4}{10}$	0,4	40%
$(e)\frac{4}{5} \times \frac{20}{20} = \frac{80}{100}$	0,80	80%
$(f)\frac{3}{4} \times \frac{25}{25} = \frac{75}{100}$	0,75	75%
$(g)\frac{5}{20} \times \frac{5}{5} = \frac{25}{100}$	0,25	25%
$(h)\frac{7}{10}$	0,7	70%
$(i)\frac{1}{4} \times \frac{25}{25} = \frac{25}{100}$	0,25	25%
$(j)\frac{2}{5} \times \frac{20}{20} = \frac{40}{100}$	0,40	40%
$(k)\frac{5}{25} \times \frac{4}{4} = \frac{20}{100}$	0,20	20%
$(l)\frac{1}{10}$	0,10	10%
$(m)\frac{3}{5} \times \frac{20}{20} = \frac{60}{100}$	0,60	60%
$(n)\frac{2}{8} \times \frac{125}{125} = \frac{250}{1000}$	0,250	25%

C1.3 Calculations using percentages:

Exercise 4:

Date : _____

Percentage: 10% van 30 = $\frac{10}{100}$ x $\frac{30}{1}$ = 3

Fraction : $\frac{10}{100}$ van $30 = \frac{10}{100}$ x $\frac{30}{1} = 3$

Percentage is only another way of writing a fraction.

(1) Write the answers.

(f) 10% of R50, 20 =
$$\frac{R}{5.02}$$

(2) Show your calculations.

(a) 20% of 40 **EXAMPLE:**

$$\frac{20}{100} \times \frac{40}{1}$$
 OF 10% of 40 = 4
Therefore 20% = 8
$$= 8$$

(d) 60% of 90
=
$$\frac{60}{100} \times \frac{90}{1}$$
 / 10% of 90 = 9
= $\frac{54}{100} \times \frac{90}{1}$ \therefore 60% is 6 x 9 = 54

(f) 80% of 90
=
$$\frac{80}{100} \times \frac{90}{1}$$
 / 10% of 90 = 9
= $\frac{72}{100} \times \frac{80}{100} \times \frac{80}{100}$

-			
-			

(g) 40% of 20

$$= \frac{40}{100} \times \frac{20}{1} / 10\% \text{ of } 20 = 2$$

$$= 8 / 40\% \text{ is } 4 \times 2 = 8$$

(i) 30% of 150

$$= \frac{\frac{30}{100} \times \frac{150}{1}}{\frac{1}{100} \times \frac{150}{1}} = \frac{10\% \text{ of } 150 = 15}{100\% \text{ is } 3 \times 15 = 45}$$

*(k) 5% of 120

$$= \frac{\frac{5}{100} \times \frac{120}{1}}{1000} / 10\% \text{ of } 120 = 12$$

$$= \frac{6}{1000} / 120 = 12$$

*(m) 25% of 250

$$= \frac{\frac{25}{100} \times \frac{250}{1}}{10\% \text{ of } 250 = 25}$$
$$= \frac{62,5}{100} \times \frac{25\%}{100} = \frac{62,5}{100}$$

(h) 60% of 120

$$= \frac{\frac{60}{100} \times \frac{120}{1}}{10\% \text{ of } 120 = 12}$$

$$= \frac{72}{10\% \text{ is } 6 \times 12 = 72}$$

*(j) 5% of 150

$$= \frac{\frac{5}{100} \times \frac{150}{1}}{10\% \text{ of } 150 = 15}$$

$$= \frac{7.5}{100} \times \frac{150}{1} \times \frac{10\% \text{ of } 150}{10\% \text{ of } 150} = 15$$

*(I) 5% of 90

$$= \frac{\frac{5}{100} \times \frac{90}{1}}{1} / 10\% \text{ of } 90 = 9$$

$$= 4.5 / 0.9 \div 2 = 4.5$$

*(n) 15% of 150

$$= \frac{\frac{15}{100} \times \frac{150}{1}}{1} / \frac{10\% \text{ of } 150 = 15}{15\% = 22,5}$$

Exercise 5:

Date : _____

CONCEPTS: Cost price: Is the total amount of money that it **costs** a manufacturer to produce a given product or provide a given service.

Selling price/Marking price: It is the price for which it is sold.

Profit/Loss: The difference between the cost price and the selling price.

Discount: A deduction from the usual cost of something

- a) The selling price of a tie is R25. The buyer qualifies for a 10% discount.
- (a) What is the price that the buyer has to pay?
- (b) The cost price of a box of apples is R125,80. The selling price is R150.
- (a) Calculate the profit.

R150 - R30 = R120

(b) The buyer qualifies for a 20% discount on the selling price.

What does he pay for the apples?

 $10\% \ of \ R25 = R2,50$

$$R25,00 - R2,50 = x$$

$$R25,00$$

$$- R2,50$$

R22,50

(a) Profit = selling price – cost price

(b)
$$20\% \text{ of R150} = \frac{20}{100} \times \frac{150}{1} = R30 \text{ discount}$$

TIMES TABLE TEST

Use the associative law (regrouping) to do column 4.

Excercise 1B:

(2x - 12x)

Date:

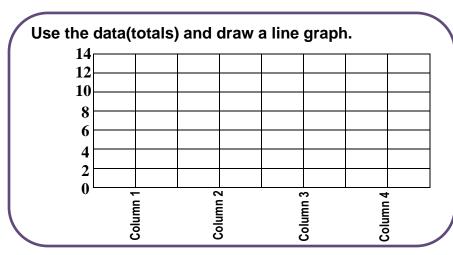
COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4
(a) 9 x 12 = <u>108</u>	(a) 2 x 8 = 16	(a) 3 x 6 =18	(a) 3 x 2 x 6 = <u>36</u>
(b) 7 x 7 = 49	(b) 6 x 4 =	(b) 8 x 3 = <u>24</u>	(b) 3 x 8 x 4 = <u>96</u>
(c) 9 x 7 = <u>63</u>	(c) 2 x 4 =8_	(c) 6 x 6 = <u>36</u>	(c) 5 x 5 x 6 = <u>150</u>
(d) 9 x 9 = <u>81</u>	(d) 9 x 8 = <u>72</u>	(d) 7 x 3 =	(d) 8 x 5 x 4 = <u>160</u>
(e) 4 x 7 = 28	(e) 8 x 8 = <u>64</u>	(e) 8 x 6 = <u>48</u>	(e) 2 x 8 x 8 = <u>128</u>
(f) 12 x 7 = <u>84</u>	(f) 6 x 8 = <u>48</u>	(f) 9 x 3 = <u>27</u>	(f) 7 x 2 x 7 = 98
(g) 6 x 7= <u>42</u>	(g) 12 x 4 = <u>48</u>	(g) 12 x 6 = <u>72</u>	(g) 4 x 8 x 4 = <u>128</u>
(h) 8 x 8 = <u>64</u>	(h) 7 x 5= <u>35</u>	(h) 5 x 9 = <u>45</u>	(h) 3 x 4 x 8 = <u>96</u>
(i) 9 x 0 =	(i) 3 x 0 =	(i) 4 x 15 = <u>60</u>	(i) 3 x 3 x 3= 27 _
(j) 4 x 12 = <u>48</u>	(j) 12 x 12 = 144	(j) 7 x 12 = <u>84</u>	(j) 6 x 4 x 11 = <u>264</u>
(k) 12 x 6 = <u>72</u>	(k) 5 x 15 = <u>75</u>	(k) 13 x 4 = <u>52</u>	(k) 7 x 9 x 0 =0
(l) 9 x 40 = <u>360</u>	(l) 12 x 30 = <u>360</u>	(I) 60 x 4 = <u>240</u>	(I) 4 x 5 x 2 = <u>40</u>
(m) 4 x 60 = <u>240</u>	(m) 7 x 70 = <u>490</u>	(m) 25 x 6 = <u>150</u>	(m) 9 x 12 x 2 = <u>216</u>
(n) 13 x 6 = <u>78</u>	(n) 15 x 7 = <u>105</u>	(n) 12 x 90 = 1080	(n) 6 x 2 x 4 = <u>48</u>



Total:

Total:





(c)	There are 40	learners	in a class.	20 % of
	the learners	have black	ck hair.	

- (i) How many learners have black hair?
- (ii) How many learners do not have black hair?
- (iii) What percentage do not have black hair? $\frac{20}{100}$ of $\frac{40}{1}$

= 8 children have black hair

- (ii) 40 8 = 32 do not have black hair
- (iii) 100% 20% = 80% of the learners

do not have black hair

(a) I have 250/ of the 2000 over a connect

- (e) I have 25% of the 200 sums correct..
- (i) How many sums are correct?
- (ii) What percentage of the sums do I have wrong?
- (iii) How many sums are wrong?

(i) $\frac{25}{100} van \frac{200}{1} = 50$ sums are correct.

(ii) 100% - 25% = 75% are wrong

200 – 50 – 150 sums are wromg

- (d) A teacher qualifies for a 40% discount on a pack of red marking pens that usually costs R80.
- (i) Calculate her discount?
- (ii) How much will she have to pay?

(i) $\frac{40}{100}$ of $\frac{R80}{1}$ = R32 discount

(ii) R80 - R32 = R48

(f) The price for a loaf of bread last year was R20. The price increased by 15%. What is the current price of a loaf of bread?

 $\frac{15}{100} of \frac{R20}{1} = R3,00$

R20 + R3 = R23,00 is the current price

- (g) A man sold 45% of his 300 model cars.
- (i) How many cars did he sell?
- (ii) How many cars are left?

(i) $\frac{45}{100}$ of $\frac{300}{1}$ = 135 are sold

(ii) 300 - 135 = 165 is left

(h The test results for three learners are as follow: Which learner has the best result?

A: $\frac{12}{50}$ B: $\frac{9}{25}$

C: 75%

A: $\frac{12}{50} \times \frac{2}{2} = \frac{24}{100} = 24\%$ **C:** = 75%

B: $\frac{9}{25} \times \frac{4}{4} = \frac{36}{100} = 36\%$

Child C has the highest percentage

What do you understand about tax?

- *(i) The price of a bicycle is R12 000,00 excluded VAT.
- (a) What does VAT stand for?
- (b) Calculate the price of the bicycle, including VAT (15%).

(a) Value added tax

$$(b) \frac{15}{100} of \frac{R12\ 000}{1}$$

= R1 800 VAT

R12 000 + R1 800 = R13 800 is the price of the bicycle.

C1.4 REVISION EXERCISE:

Date : _____

(1) Arrange in ascending order:

Possible total: 30

	CALCULATION (Rewrite the numbers in the same format)	ANSWERS
$\frac{3}{10}$; 3%; 3	30%; 3%; 300%	3%; $\frac{3}{10}$; 300%
75% ; 7,5; $\frac{1}{4}$	0,75 ; 7,5 ; 0,25	0,25 ; 0,75 ; 7,5
12,5; 125%; $\frac{1}{100}$	12,5 ; 1,25 ; 0,01	0,01 ; 1,25 ; 12,5

(2) Write as percentages.

(a)
$$\frac{75}{100} =$$
 $\frac{75\%}{100} =$ (b) $\frac{80}{100} =$ $\frac{80\%}{100} =$ (c) $\frac{125}{100} =$ $\frac{125\%}{100} =$ (3)

(3) Write the fractions as percentages and show all calculations.

	CALCULATIONS	PERCENTAGES
$(a)\frac{9}{10}$	$\frac{9}{10} \times \frac{10}{10} = \frac{90}{100}$	90%
$(b)\frac{1}{5}$	$\frac{1}{5} \times \frac{20}{20} = \frac{20}{100}$	20%
$(c)\frac{16}{20}$	$\frac{16}{20} \times \frac{5}{5} = \frac{80}{100}$	80%
$(d)\frac{15}{25}$	$\frac{15}{25} \times \frac{4}{4} = \frac{60}{100}$	60%

(8)

MIXED OPERATIONS

Exercise 1C:

Date: _____

В	0	D	M	Α	S
			 		
Brackets	of	Division	Multiplication	Addition	Subtraction

(1) Indicate if the answer is correct or wrong. Write the correct answer.

(a)	$3 + (5 \times 5) - 8 = 20$
(b)	12 + 3 x 4 = 60
(c)	$36 \div 6 \times 6 + 4 = 40$
(d)	$14 + (14 \times 2) \div 2 = 21$
(e)	$56 \div 7 \div 2 \times 5 = 20$
(f)	$30 + (12 \times 5) - 45 = 45$
(g)	12 + 12 x 4 = 96
(h)	6 x 1 x 6 + 4 x 2 = 80
(i)	$90 + (15 \times 2) \div 2 = 105$
(j)	$(4 \times 5) + (2 \times 6) = 32$
(k)	40 + 40 x 2 = 160
(I)	12 + 36 x 4 = 156
(m)	6 x 0 x 6 + 14 x 5 = 76
(n)	$12 + 6 - 8 \times 2 = 52$
(o)	$(12 \times 5) + (12 \times 6) = 132$

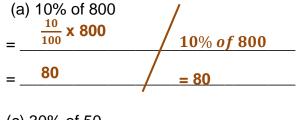
RIGHT	WRONG
✓	
	×
✓	
	×
✓	
✓	
	×
	×
✓	
✓	
	×
✓	
	×
	×
✓	

FINAL ANSWER
24
28
60
44
120
70
2

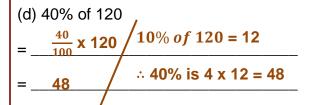
(4) Write the percentages as common fractions in its simplest form.

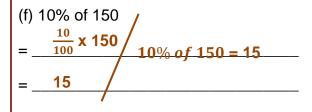
(a) 45 %	$\frac{45}{100}$	$\frac{45}{100} \div \frac{5}{5} = \frac{9}{20}$	
(b) 35 %	$\frac{35}{100}$	$\frac{35}{100} \div \frac{5}{5} = \frac{7}{20}$	
(c) 25 %	$\frac{25}{100}$	$\frac{25}{100} \div \frac{25}{25} = \frac{1}{4}$	
(d) 15%	15 100	$\frac{15}{100} \div \frac{5}{5} = \frac{3}{20}$	(8)

(5) Write step by step.



	(6)	(b) 20% of 60
$=\frac{100}{100} \times 60 / 10\% \ of \ 60 = 6$	$10\% \ of \ 60 = 6$	$=\frac{20}{100} \times 60$
= 12	∴ 20% is 2 x 6 = 12	= 12





(6) Do the following. Write a number sentence and show all calculations.

A jeweller has a 20% promotion on all the watches just before Christmas.

The normal selling price of one watch is R200.

- (i) Calculate the selling price after 15% VAT was added added to the normal selling price.
- (ii) Calculate the price after 20% discount was deducted from the selling price in (i)

(i)
$$\frac{15}{100}$$
 x R200 (ii) $\frac{20}{100}$ x R230
R30 discount = R46,00
R200 + R30 = R230 R230,00 - R46,00 = R184.00

TIMES TABLE TEST

(2x-12x) **Exercise 1D:**

Use the associative law to complete column 4.

COLUMN 3	COLUMN 4
(a) 3 x 6 = 18	(a) $2 \times 2 \times 6 = 24$

(a) $9 \times 9 = 81$

Date: ___

(b) $7 \times 12 = 84$

COLUMN 1

- (c) $7 \times 7 = _{49}$
- (d) $9 \times 11 = 99$
- (e) $5 \times 7 = _{\underline{}}$
- (f) $8 \times 7 = _{56}$
- (g) $6 \times 7 = 42$
- (h) $8 \times 8 = _{64}$
- (i) 9 x 4 = <u>36</u>
- (j) 4 x 8 = <u>32</u>
- (k) $12 \times 6 = _{72}$
- (I) $9 \times 6 = _{\underline{}}$

Total:

(a) $8 \times 8 = _{-}$ 64

COLUMN 2

- (b) $6 \times 6 = 36$
- (c) $2 \times 12 = ____24$
- (d) $9 \times 8 = _{72}$
- (e) 8 x 12 = <u>96</u>
- (f) $6 \times 8 =$ ____48_
- (h) $7 \times 7 = 49$
- (i) 3 x 8 = **24**
- (j) $7 \times 12 = 84$
- (k) $4 \times 15 = 60$
- (I) $8 \times 30 = 240$

- (b) $8 \times 3 = 24$
- (c) $9 \times 6 = _{54}$
- (d) $7 \times 3 = __21$
- (e) $4 \times 6 = 24$
- (f) $12 \times 3 = 36$
- (g) 12 \times 6 = 72
- (h) $5 \times 8 = 40$
- (i) $4 \times 15 = 60$
- (j) $7 \times 2 = 14$
- (k) $16 \times 4 = 64$
- (I) $80 \times 4 = 320$

Total:

- (b) $3 \times 9 \times 2 = 54$
- (c) $5 \times 4 \times 6 = 120$
- (d) $5 \times 5 \times 4 = 100$
- (e) $2 \times 6 \times 8 = _{96}$
- (g) $4 \times 4 \times 4 = _{64}$
- (h) $3 \times 4 \times 7 = 84$
- (i) 3 x 3 x 3= ____**27**__
- (j) $6 \times 4 \times 5 = _{\underline{}} 120$
- (k) $7 \times 9 \times 2 =$ 126

Total:

Total:

