

SHARP

Worksheet 4 Memo – Proportion, Rates and Percentages

Grade 10 Mathematical Literacy

1. a) direct b) direct
c) inverse d) indirect
e) indirect f) inverse
g) indirect h) direct
i) indirect j) inverse

2. a) inverse proportion

Speed (Km/h)	100	120	140	150	160	170	180	x
Safety rating	90	75	64.29	60	56.25	52.94	50	$y = \frac{9000}{x}$

- b) direct proportion

Items	3	6	9	10	12	15	20	30	x
Cost	R78	R156	R234	R260	R312	R390	R520	R780	$y = R26 \times x$

- c) indirect proportion

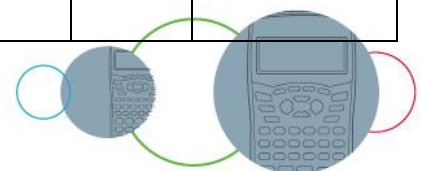
Number of minutes brushing teeth	0	1	2	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$	x
Number of cavities	70	58	46	34	28	22	16	10	4	$y = -12x + 70$

- d) inverse proportion

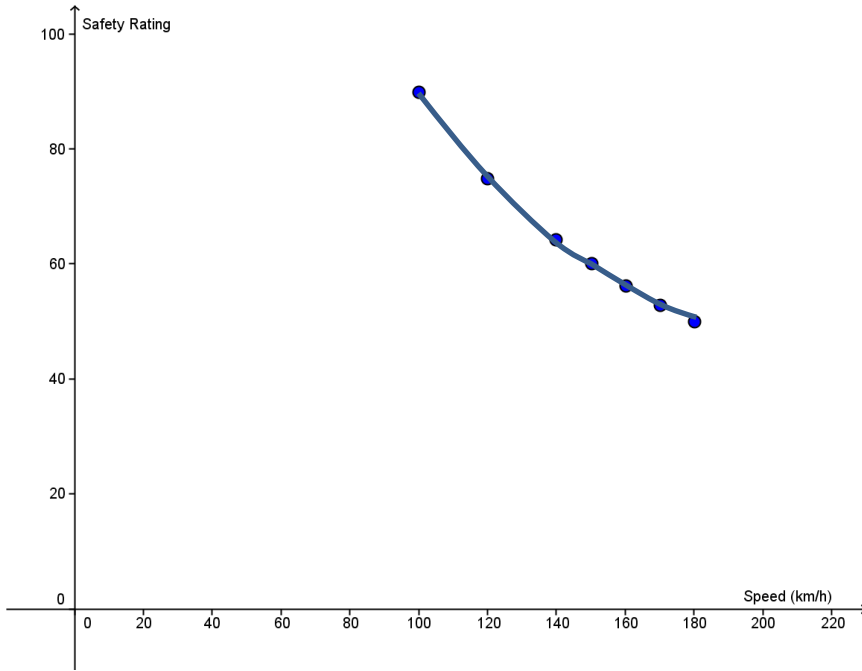
Number of items bought	10	20	40	50	75	100	160	200	x
Cost per item	R120	R60	R30	R24	R16	R12	R7.50	R6	$y = \frac{1200}{x}$

- e) direct proportion

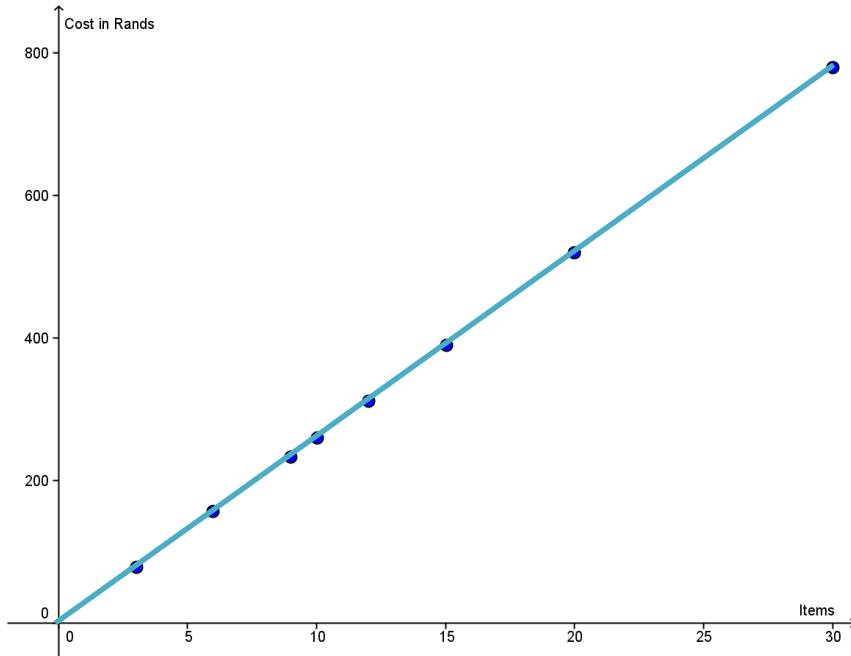
Mm of rain	5	10	12	15	20	27	30	35	x
Number of car accidents	13	23	27	33	43	57	63	73	$y = 2x + 3$



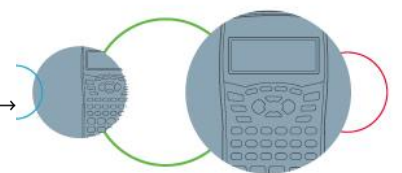
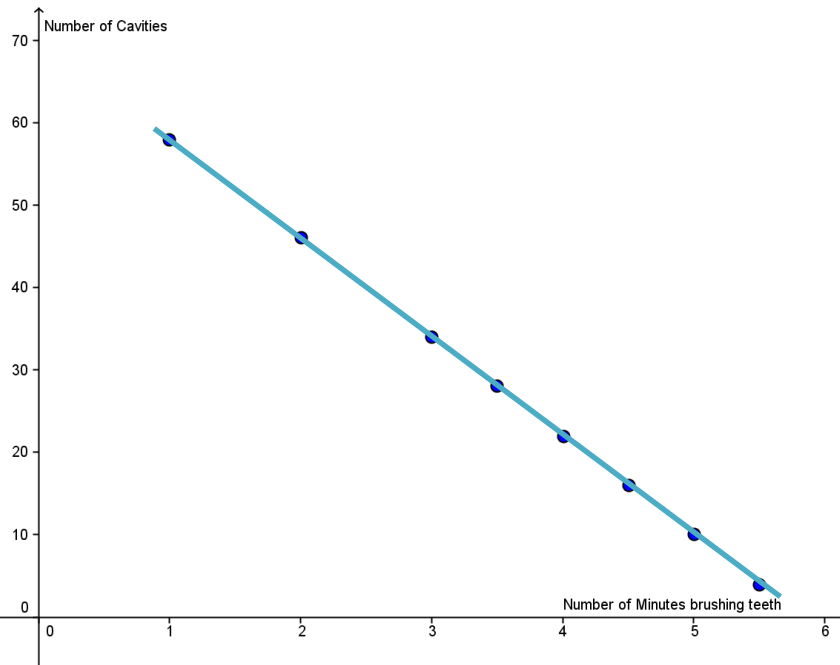
3. a)

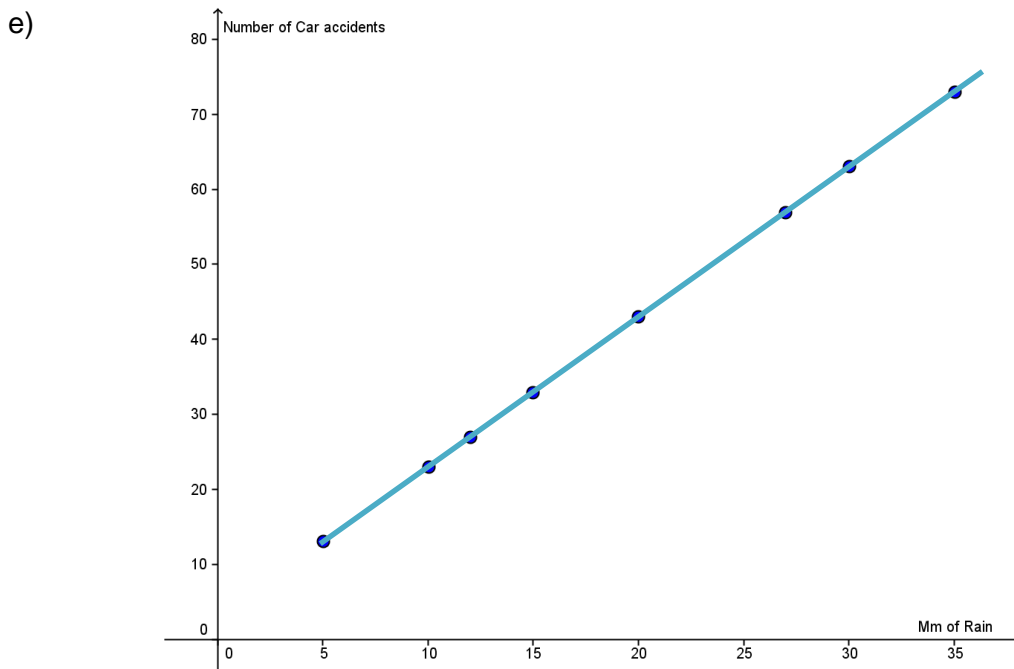
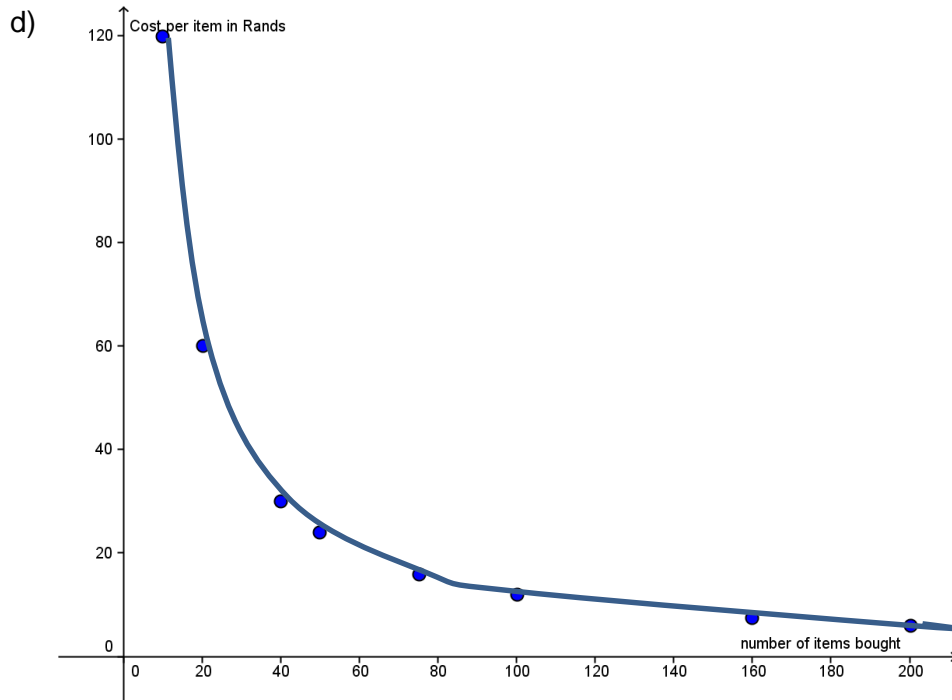


b)



c)



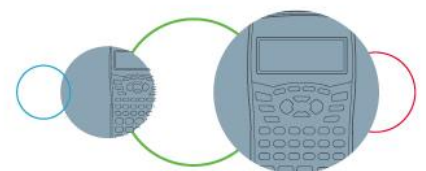


4. a) Paying R139.80 for 12l of petrol.
 $= R139.80 \div 12l$
 $= R11,65/l$

b) Travelling 500km in 4 hours.
 $= 500km \div 4 \text{ hours}$
 $= 125km/h$

c) 480g cereal for R32.99
 $= R32,99 \div 480g$
 $= R0,07/g$

d) A tap drips 190ml over 10 minutes.
 $= 190ml \div 10min$
 $= 19ml/min$



- e) 991 people stood in a queue over 5 hours.
 = 991 people ÷ 5 hours
 = 198 people / h

5. a) 1.5l for R16,99 OR 3l for R36,99
 ∴ R16,99 ÷ 1.5l ∴ R36,99 ÷ 3l
 = R11,33 /l = R12,33 /l

∴ 1.5l of Apple juice is the cheapest option per litre

- b) 300g for R22,99 OR 500g for R29,99 OR 750g for R43,99
 ∴ R22,99 ÷ 300g ∴ R29,99 ÷ 500 ∴ R43,99 ÷ 750
 = R0,077 /g = R0,060 /g = R0,059 /g

∴ 750g of Bran flakes is the cheapest option per gram.

- c) 500g for R27,49 OR 750g for R34,19 OR 1.2kg for R44,95
 ∴ R27,49 ÷ 500g ∴ R34,19 ÷ 750g ∴ R44,95 ÷ 1 200g
 = R0,055 /g = R0,046 /g = R0,037 /g

∴ 1.2kg of Corn flakes is the cheapest option per gram.

- d) 200g for R89,99 OR 100g for R54,99 ∴ 200g of coffee is the
 ∴ R89,99 ÷ 200 ∴ R54,99 ÷ 100 cheapest option per gram.
 = R0,45 /g = R0,55 /g

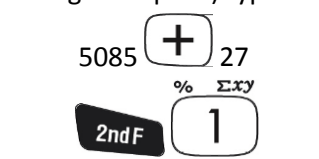
- e) 500g for R6,99 OR 1kg for R9,49 OR 5kg for R43,99
 ∴ R6,99 ÷ 500 ∴ R9,49 ÷ 1 000 ∴ R43,99 ÷ 5 000
 = R0,014 /g = R0,0095 /g = R0,0088 /g

∴ 5kg of brown sugar is the cheapest option per gram.

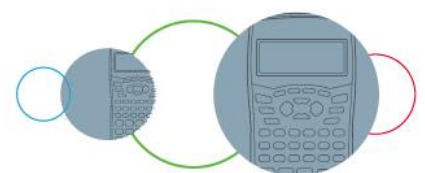
6. a) 5 085 + 27% b) 450 + 95%
 = 5 085 + 0,27(5 085) = 450 + 0,95(450)
 = 6 457,95 = 877,5

- c) 681 + 63% d) 130 143 + 40%
 = 681 + 0,63(681) = 130 143 + 0,4(130 143)
 = 1 110,03 = 182 200,2

Short Cut:
 On the SHARP EL-535 using example a) type in



and the answer will automatically appear – 6'457.95
 You can use this short cut for subtraction, multiplying and dividing



$$\begin{aligned} \text{e)} \quad & 70 + 80\% \\ & = 70 + 0,8(70) \\ & = 126 \end{aligned}$$

$$\begin{aligned} \text{f)} \quad & 3\,133 + 15\% \\ & = 3\,133 + 0,15(3\,133) \\ & = 3\,602,95 \end{aligned}$$

$$\begin{aligned} \text{g)} \quad & 200 + 85\% \\ & = 200 + 0,85(200) \\ & = 370 \end{aligned}$$

$$\begin{aligned} \text{h)} \quad & 67 + 75\% \\ & = 67 + 0,75(67) \\ & = 117,25 \end{aligned}$$

$$\begin{aligned} \text{i)} \quad & 4\,144\,554 + 99\% \\ & = 4\,144\,554 + 0,99(4\,144\,554) \\ & = 8\,247\,662,46 \end{aligned}$$

$$\begin{aligned} \text{j)} \quad & 50 + 10\% \\ & = 50 + 0,1(50) \\ & = 55 \end{aligned}$$

$$\begin{aligned} 7. \quad \text{a)} \quad & 62 - 50\% \\ & = 62 - 0,5(62) \\ & = 31 \end{aligned}$$

$$\begin{aligned} \text{b)} \quad & 42\,246 - 75\% \\ & = 42\,246 - 0,75(42\,246) \\ & = 10\,561,5 \end{aligned}$$

$$\begin{aligned} \text{c)} \quad & 862 - 99\% \\ & = 862 - 0,99(862) \\ & = 8,62 \end{aligned}$$

$$\begin{aligned} \text{d)} \quad & 6\,917 - 10\% \\ & = 6\,917 - 0,1(6\,917) \\ & = 6\,225,3 \end{aligned}$$

$$\begin{aligned} \text{e)} \quad & 430\,473 - 25\% \\ & = 430\,473 - 0,25(430\,473) \\ & = 322\,854,75 \end{aligned}$$

$$\begin{aligned} \text{f)} \quad & 8\,000 - 65\% \\ & = 8\,000 - 0,65(8\,000) \\ & = 2\,800 \end{aligned}$$

$$\begin{aligned} \text{g)} \quad & 7 - 80\% \\ & = 7 - 0,8(7) \\ & = 1,4 \end{aligned}$$

$$\begin{aligned} \text{h)} \quad & 750 - 40\% \\ & = 750 - 0,4(750) \\ & = 450 \end{aligned}$$

$$\begin{aligned} \text{i)} \quad & 2\,558 - 30\% \\ & = 2\,558 - 0,3(2\,558) \\ & = 1\,790,6 \end{aligned}$$

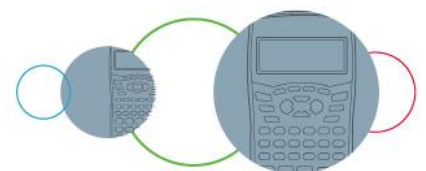
$$\begin{aligned} \text{j)} \quad & 245 - 27\% \\ & = 245 - 0,27(245) \\ & = 178,85 \end{aligned}$$

$$\begin{aligned} 8. \quad \text{a)} \quad & 38\% \text{ of R1\,162?} \\ & = \text{R1\,162} \times 0,38 \\ & = \text{R441,56} \end{aligned}$$

$$\begin{aligned} \text{b)} \quad & 2\% \text{ of 170?} \\ & = 170 \times 0,02 \\ & = 3,4 \end{aligned}$$

$$\begin{aligned} \text{c)} \quad & 79\% \text{ of 410?} \\ & = 410 \times 0,79 \\ & = 323,9 \end{aligned}$$

$$\begin{aligned} \text{d)} \quad & 9\% \text{ of 5\,483?} \\ & = 5\,483 \times 0,09 \\ & = 493,47 \end{aligned}$$



- e) 100% of 7 561?
 $= 7\,561 \times 1$
 $= 7\,561$
- f) 60% of 8 719 581?
 $= 8\,719\,581 \times 0,6$
 $= 5\,231\,748,6$
- g) 15% of 952?
 $= 952 \times 0,15$
 $= 142,8$
- h) 25% of 343?
 $= 343 \times 0,25$
 $= 85,75$
- i) 150% of 700
 $= 700 \times 1,5$
 $= 1\,050$
- j) 1% of 9 372
 $= 9\,372 \times 0,01$
 $= 93,72$

9. a) new price = cost price + 80%(cost price)
 $\therefore R94,70 = \text{cost price}(1 + 0,8)$
 $\therefore R94,70 = \text{cost price} (1,8)$
 $\therefore \text{Cost price} = R94,70 \div 1,8$
 $\therefore \text{Cost Price} = R52,61$
- b) Sale price = new price – 35% of new price
 $= R94,70 - 0,35(94,7)$
 $= R61,56$
- c) Money made = sale price – cost price
 $= R61,56 - R52,61$
 $= R8,95$
- d) Money made = new price – cost price
 $= R94,70 - R52,61$
 $= R42,09$
- e) percentage profit = $\frac{\text{money that could have been made} - \text{money actually made}}{\text{money that could have been made}} \times 100$
 $= \frac{42,09 - 8,95}{42,09} \times 100$
 $= 78,74\%$

