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QUESTION 1A

Orders to be placed based on current EOQ:	38 000 kg / 855 kg	
	44.444 orders	
	∴ **45 orders**	
Discount: (R50 - R49) x 38 000 kg		R 38 000.00
Savings on orders (45 orders - 38 orders) x R120		R 840.00
TOTAL SAVINGS		**R 38 840.00**
Extra Holding costs (R600 x 12 months)		R 7 200.00
Current holding costs		
(R50 x 14% + R3 + R50 x 5%) x (855kg / 2)	R 5 343.75	
New holding costs		
(R49 x 14% + R3 + R49 x 5%) x (1 000 kg */ 2)	R 6 155.00	R 811.25
TOTAL COSTS		**R 8 011.25**

* 38 000 kg / 38 orders = 1 000 kg per order

NET SAVINGS	**R 30 828.75**

The company should accept the special order, the savings exceed the costs.

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QUESTION 1B

Learing curve = $\frac{\text{Cumulative average time per unit}}{\text{Previous cumulatve average time per unit}}$

= $\frac{\text{(50 000 hours + 46 000 hours) / 2}}{\text{50 000 hours}}$

= $\frac{\text{48 000 hours}}{\text{50 000 hours}}$

= **96.0%**

TOTAL TIME FOR THE FIRST 32 UNITS:

$y = ax^b$

$y = 50\,000 \times 32^{(\log 0.96/\log 2)}$

$y = 50\,000 \times 32^{-0.05889}$

y = **40 768 .34 hours**
x 32 units

TOTAL TIME: 1 304 587 hours

TOTAL TIME FOR THE FIRST 16 UNITS:

$y = ax^b$

$y = 50\,000 \times 16^{(\log 0.96/\log 2)}$

$y = 50\,000 \times 16^{-0.05889}$

y = **42 467.33 hours**
x 16 units

TOTAL TIME: 679 477 hours

TOTAL HOURS REQUIRED FOR 17-32 UNITS

= (1 304 587 hours - 679 477 hours

= **625 110 hours**

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QUESTION 2:

OVERHEAD	COST	TOTAL ACTIVITY		COST DRIVER PER		DUFF ACTIVITY	COST	BUFF ACTIVITY	COST
Material handling	R 150 000	150	movements	R 1 000	movements	100	R 100 000	50	R 50 000
Material procurement	R 50 750	350	orders	R 145	orders	250	R 36 250	100	R 14 500
Set-up costs	R 150 000	100	set-ups	R 1 500	set-ups	60	R 90 000	40	R 60 000
Quality control	R 250 700	230	inspections	R 1 090	inspections	130	R 141 700	100	R 109 000
Processing	R 600 000	50 000	hours	R 12	hours	40 000	R 480 000	10 000	R 120 000
	R 1 201 450						**R 847 950**		**R 353 500**
					Annual production		80 000		20 000
					Overhead cost per unit		**R 10.60**		**R 17.68**

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QUESTION 3:

a) Breakeven volume = $\frac{\text{Fixed costs}}{\text{Contribution per unit}}$

= $\frac{45\ 250}{(410\ 000 - 78\ 750 - 94\ 575 - 43\ 000) / 10\ 000 \text{ necklaces}}$

= $\frac{45\ 250}{19.3675}$

= 2336.39 necklaces

= **2 337** necklaces

b)

OPERATING STATEMENT (UNDER

			WORKINGS					
Budgeted profit		[10 000 x (R40 - R6 - R10 -R4 - R5]	**W1**			R	150 000	
Sales volume profit variance						R	-	
Sales price variance		[R410 000 - 10 000 necklaces x (R40)]				R	10 000	**(F)**
						R	**160 000**	
				Favour (F)		**Adverse (A)**		
Cost variances								
Materials	Price	[R78 750 - 2 500kg x R30]	**W2**			R	3 750	
	Usage		**W3**			R	1 500	
Labour	Rate	[94 575 - (4 850 x R20)]		R	2 425			
	Efficiency		**W4**	R	3 000			
Variable o/h	Expenditure	[43 000 - (2 050 x R20)]				R	2 000	
	Efficiency	(250 necklaces x R4)	**W3**			R	1 000	
Fixed overheads	Expenditure	(R50 000 - R45 250)		R	4 750			
	Volume			R	-			
				R	**10 175**	**R**	**8 250**	**R** **1 925** **(F)**
Actual profit							**R**	**161 925**
Sales							**R**	**410 000**
Cost of sales							**R**	**-248 075**
	Material						R	-78 750
	Direct labour						R	-94 575
	Variable overheads						R	-43 000
	Fixed overheads						R	-45 250
	Closing stock	(2 500 - 2 050 kg x R30)					R	13 500
Profit							**R**	**161 925**

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WORKINGS

W1 Fixed overhead cost per unit: 10 000 necklaces x 0.5 hours
= 5 000 hours
= R50 000 / 5 000 hours
= **R 10** **per hour**
R 5 **per unit**

W2 1 necklace = 200g of material at R6.00
So 1 kg of material = R6 x (1 000g /200g)
= **R 30** **per kg of material**

W3

2 050 kg should produce:	(2 050kg / 200g)	10 250 necklaces		
Did produce		10 000 necklaces		Did produce
DIFFERENCE		**250 necklaces**	**(A)**	DIFFERENCE
Standard material cost per necklace		R 6		Standard material cost per necklace
VARIANCE		**R 1 500**	**(A)**	VARIANCE

ALTERNATIVELY:

10 000 necklaces should use	(10 000 x 200g)	2 000 kg	
Did use		2 050 kg	
DIFFERENCE		**50 kg**	**(A)**
Standard material cost per kg		R 30	
VARIANCE		**R 1 500**	**(A)**

W4

4 850 hours should produce	(4 850 hours / 0.5 hours)	9 700 necklaces	
Did produce		10 000 necklaces	
DIFFERENCE		**300 necklaces**	**(F)**
Standard labour cost per necklace		R 10	
VARIANCE		**R 3 000**	**(F)**

ALTERNATIVELY:

10 000 necklaces should take	(10 000 x 0.5 hours)	5 000 hours	
Did use		4 850 hours	
DIFFERENCE		**150 hours**	**(F)**
Standard labour cost per hour	(R10 / 0.5 hours)	R 20	
VARIANCE		**R 3 000**	**(F)**

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QUESTION 4:

a) Material

Material	Material needed	Inventory quantity	Current price	Need to purchase	Purchase price	TOTAL
A	2 200	400	R 6.00	1 800	R 10.00	**R 20 400**
B	300	300	R 30.00	-	R 34.00	**R 9 000**
C	900	600	R 48.00	300	R 35.00	**R 39 300**
D	400	800	R 15.00	-	R 18.00	**R 12 000**
						R 80 700

Direct labour		
Builders:	R60 000 / 12 months x 6 months x 2 workers + R1 000 x 2 workers	**R 62 000**
Casuals:	R5 000 x 4 workers	**R 20 000**
TOTAL VARIABLE COST		R 162 700
MARK-UP 100%		R 162 700
CONTRACT PRICE		**R 325 400**

b)

Material A	Value at Replacement value	(2 200kg x R10)	R	22 000
Material B	Value at Replacement value	(300kg x R34)	R	10 200
Material C		(300kg x R35 + 600kg x R27)	R	26 700
Material D	Opportunity costs	(R16 x 400)	R	7 600
Labour	Replacement labour		R	49 000
Casual labour		(R5 000 x 4)	R	20 000
Equipment	Already owned	Sunk costs	R	-
Equipment	Specialised equipment	(R25 000 - R18 000)	R	7 000
Premises		Sunk costs	R	-
Admin expenses		Relevant to project	R	7 000
TOTAL RELEVANT COSTS			**R**	**149 500**

c) The potential of future business from other schools?
The ability for casual labourers to complete the project at the required quality level?
The effect of the short term order on future prices to other customers
Employee morale - will they complete the project in the "quiet" time? If not?
Potential bid price by competitors?

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QUESTION 5A:

a) Return on investment (ROI) = $\frac{\text{Controllable "operating" profit}}{\text{Controllable investment}}$

	DIVISION 1		**DIVISION 2**	
=	R	105 000	R	210 000
	R	450 000	R	975 000
=		**23.3%**		**21.5%**

Division 1 has a higher return then Division 2. Division 1 is utilizing their controllable investments better than Division 2.

Residual income (RI) = Controllable profit - Cost of capital of controllable investments

DIVISION 1	R105 000 - R 450 000 x 15%
=	**R 37 500**
DIVISION 2	R210 000 - R975 000 x 15%
=	**R 63 750**

Division 2 has a higher RI then Division 1.

b) Return on investment would be the better measure√ when comparing divisions as it is a relative measure√ (i.e. based on percentage returns) (Drury 2012:749)

or

To overcome some of the dysfunctional consequences of ROI, the residual income approach can be used…√
…Residual income suffers from the disadvantages of being an absolute measure, which means that it is difficult to compare the performance of a division with that of other divisions…√ (Drury 2012:491)

c) If the manager invest in a project with a lower ROI than his current division, the Division ROI will decrease.
The project's ROI is 22%, which is slight lower than the Division's ROI of 23.3%, therefor the manager will not invest in the project.
The manager is only acting on the best interest of his/her division and not Nkosi holdings, because the ROI of the project is higher than Division 2, (21.5%) thus improving the Group's total ROI.

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QUESTION 5B:

a) Coefficient of variation = Standard deviation in profits / Expected outcome/Mean profit

	TELEVISION	RADIO
Standard deviation in profits	R 55 446	R 231 737
Expected outcome/Mean profit	R 810 432	R 960 305
=	**6.84%**	**24.13%**

b) On the surface, it seems if the Radio marketing plan is the most profitable. However, the uncertainty is higher, as evidenced by the higher standard deviation.

The range of outcome for the Television marketing plan is group closely together (smaller standard deviation). The coefficient of variation is also smaller. Because the outcome of the Television marketing is more certain (less risky), management should accept this plan. However the risk appetite of the management should also be taken into account. A risk seeking management team might be prepared to take a chance on a campaign with a 24.13% coefficient of variation

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QUESTION 5C:

a) Monthly sales = 15 000 / 3 months
5 000 units

Selling price per unit = R 2 250 000 / 15 000 units
R 150.00

	Jul-14	Aug-14	Sep-14	TOTAL
Sales volume	5 000	5 000	5 250	15 250
Selling price per unit	R 150	R 150	R 165	
Sales value	**R 750 000**	**R 750 000**	**R 866 250**	**R 2 366 250**

	Jul-14	Aug-14	Sep-14
+ Sales	5 000	5 000	5 250
+ Closing inventory**	500	525	525
- Opening inventory	1 500	500	525
PRODUCTION	**4 000**	**5 025**	**5 250**

** Assumption is that closing inventory should cover 10% of the following month's sales!