

Practice Questions (and Answers) for K&R Products Budgets

The following problems use the Budget Schedules (pages 1-49), the overhead detail data and actual data (yellow pages 18-26), and the performance reports (yellow pages 1-17) for K&R Products, Inc.

1. According to the materials budget (p. 10), 80,810 units of Lumber 1x12 are required for September. How was the 80,810 computed?

	p 1, 2, 3			p 7	
	<u>1x12 per unit</u>			<u>bgt production</u>	
S	4 ft	x		3,330	Total
B	10 ft	x		1,885	80,810
T	32 ft	x		1,520	

2. The finishing department is expected to require 4,360 direct labor hours (p. 23) in September. How was the 4,360 computed?

	p 1, 2, 3			p 7	
	<u>DLH per unit</u>			<u>bgt production</u>	
	<u>in Finishing</u>				Total
	0.4	x		3,330	4,360 hours
	0.8	x		1,885	
	1.0	x		1,520	

3. How much will company overhead increase for each 75-unit increase in production of tables?

	p 3			<u>Units</u>	
	<u>VOH per table</u>			75	=
	\$ 2.75	x			206.3
					increase

4. Assume that the company has sold all the majestic tables on hand, and a customer requests 100 units of the table. How much will company costs increase if it produces the 100 tables?

The cost to produce one table (from page 3) is	\$	64
Since the question refers to 100 tables	x	100
Total cost to product the 100 tables		6,400
If you assume that the tables are also SOLD,		
you must also consider the increase		
in marketing costs: (\$105*.07)*100		735.00
Total increase assuming tables are sold	\$	7,135

5. Why do units to be produced and units to be sold differ in most months?

Because K&R is either building up or diminishing its inventories.

6. Compute the new unit cost for the Royal Bench for each of the following conditions:

Each of the three questions in this part can be interpreted as the cost to make one bench or the cost to make and sell one bench.

- a. Maintenance labor wage rates increase from \$10 to \$15. [This requires understanding of several of the pages between yellow pages 18-22. You might wait to answer this one until you have answered Questions 30, 31, and 32.]

Each bench requires:

(pages 19 and 22)
(pages 21 and 22)

1/10 maintenance hour per DLH in bench cutting
1/20 maintenance hour per DLH in finishing

p 2					
<u>DLH per unit</u>	x	<u>Maint hrs</u>	x	<u>\$5 increase</u>	= <u>cost increase</u>
B cut	0.25	x 1/10	x	5	= \$ 0.125
Finish	0.8	x 1/20	x	5	= 0.200
				Increase in cost to produce one unit	\$ 0.325
Original cost to produce one bench (page 2)					22.000
New cost to PRODUCE one bench					\$ 22.325

Obviously, the total cost to produce *and sell* one unit would require you to consider the marketing costs (\$50*.07)

3.500

Cost to product and sell one bench

\$ 25.825

- b. The price of lumber 1x12 increases to \$6.40 per eight foot piece.
\$6.40 per 8 foot length equals \$0.80 per foot: an increase of 10 cents per foot.

Increase	\$	0.10	
Feet required		10	(page 2)
Increase/unit	\$	1.00	
Original cost		22.00	(page 2)
New cost	\$	23.00	per Bench

- c. Wages in the Finishing Department increase to \$9 per hour.

The original wage rate in finishing is \$8.25 (p 2) per hour, the increase would be \$0.75 per hour.

(.75 * .8 hours)	= \$	0.60	per unit increased cost
Original cost (from p 8)		22.00	
New cost per unit	\$	22.60	

7. What is the budgeted variable cost per unit for each product sold in the West Territory? How do these costs compare with the budgeted variable costs per unit in the East Territory?

		Total VC	Unit sales	VC per unit
p33	S	\$ 9,840 /	750	= \$ 13.120
p35	B	15,300 /	600	= \$ 25.500
p37	T	67,783 /	950	= \$ 71.351

Table VC's rounded.

These budgeted VC's are consistent throughout the budget schedules, for all territories, all salespeople, and all months.

8. Compute the selling price for each product. [Each product is expected to be sold at the same price in all territories.]

Since planned selling prices are consistent throughout the budget, any convenient pages are fine for gathering the appropriate information. From Page 4, for July

	\$ Sales	Units	Price/unit
S	\$ 32,800 /	2,050	= \$ 16.00
B	\$ 61,250 /	1,225	= \$ 50.00
T	\$ 162,750 /	1,550	= \$ 105.00

9. What percentage of dollar sales in the West Territory is expected to be sold by Bob Black?

Bob's budgeted sales	\$ 518,850	p 31
Total budgeted W. Territory sales	918,780	p 11 or p 28
\$ 518,850 /	918,780	= 56.47%

10. What would be the impact on expected November segment contribution for Jane Green if the expected cost of Blue Paint increased by ten percent?

Before we can consider Jane, we need to know the impact of cost change on cost of products. Only S and B are blue, so T will not be affected.

Product	Current Cost	% Change	Per Unit Cost Increase
S (p 1)	\$ 1.88	x 0.10	= \$ 0.1880 per S
B (p 2)	\$ 2.82	x 0.10	= \$ 0.2820 per B

An increase in VC means a matching decrease in marginal income and in segment contribution. Jane's budgeted November sales, page 26:

	Units	MI decrease per unit	Decrease in MI
S	2,600	x \$ 0.1880	= \$ 488.80
B	545	x \$ 0.2820	= 153.69
			\$ 642.49

Drop in Jane's segment contribution

11. Pages 30 through 49 of the budget schedules contain contribution schedules. Discuss the relationship between these schedules and the organization chart.

Each "box" on the organization chart in the MARKETING area has a contribution schedule, as does the company president. Responsibility centers in the production area have cost reports, because they have no revenues to use to compute marginal income or segment contribution.

Normally each manager receives a monthly report on the expenses or revenues for which that manager is responsible. Only expenses or revenues affected by the decisions of the manager appear in his or her report. No arbitrary cost allocations appear in any of the reports, although inter-departmental charges do appear. Variable costs that arise in one segment because of decisions made in another segment are charged to the segment in which the decision is made. All cost charges are made at standard -- no cost variances are passed along to succeeding departments.

At lower levels in the organization, only costs and revenues directly affected by the managers directly affected by the managers are included in the reports. However, at higher organization levels, both costs and revenues directly affected by the manager's decisions and those items directly affected by managers who report to him/her are included in the report. All costs and revenues indirectly affected by the manager are summarized in his or her report.

For example, the report for the plant manager contains a summary of the cost performance of all departmental managers reporting to him/her, but it includes details of those expenses directly affected by his decisions. The same holds true for the Vice President of Marketing.

This summarizing of all organization segments below in the reports at each level in the organization links the reports from the top of the organization to the bottom.

12. Reconcile the budgeted July contribution for the two territories to budgeted net income for July.

<u>Individual Product Contribution -- East Territory</u>		
Foot stool (page 32)	\$	2,694
Royal Bench (page 34)		14,113
Majestic Table (page 36)		18,140
Total product contribution		<u>\$ 34,947</u>

Fixed costs traceable to territory, but common to products within the territory (computations below)

Administration	\$	5,150	
Advertisement & promotion		950	
Other		300	<u>6,400</u>

Territory contribution (as on page 23) \$ 28,547

Computing Traceable/Common Costs:

	<u>Admin.</u>	<u>Ad/Promo</u>	<u>Other</u>
Foot Stool (page 32)	\$ -	\$ 1,050	\$ -
Royal Bench (page 34)	-	1,200	-
Majestic Table (page 36)	-	2,050	-
Totals traceable to products			
in East Territory	\$ -	\$ 4,300	\$ -
Fixed costs traceable to East Territory (p. 23)	<u>5,150</u>	<u>5,250</u>	<u>300</u>

Fixed costs traceable to territory but joint to products in the territory	<u>\$ 5,150</u>	<u>\$ 950</u>	<u>\$ 300</u>
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A thorough understanding of the fixed costs included on page 23 would allow you to compute the traceable/common costs in a slightly different way:

Any costs traceable to products are deducted on the product pages and on the territory pages; any fixed costs traceable only to the territory, but not to the products within the territory, are included on the territory page, but not the product pages.

Obviously, then, the difference between the sum of product contributions and the territory contribution must be due to the fixed costs traceable to the territory but not to the products. Those fixed costs are actually distinguished by their labels, if you understand how to interpret the labels:

Administration costs -- Traceable to			
Territory	\$	3,450	<i>Not traceable to products</i>
Salesperson		<u>1,700</u>	<i>Not traceable to products</i>
Sum	\$	<u>5,150</u>	<i>Same number as above!</i>
Ad/Promo--Traceable to			
Territory as a Whole		950	<i>Not traceable to products</i>
Other--Territory		<u>300</u>	<i>Not traceable to products</i>
Total fixed costs traceable to territory but joint to products in the territory	<u>\$</u>	<u>6,400</u>	

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12, continued.

Computing Traceable/Common Costs:

	Production Costs	Marketing Fixed Costs			Admin Costs
		Admin.	Ad/Promo	Other	
East Territory (page 23)	\$ -	\$ 5,150	\$ 5,250	\$ 300	\$ -
West Territory (page 24)	-	6,850	9,220	300	-
Total Fixed Costs					
Traceable to Territories	\$ -	\$ 12,000	\$ 14,470	\$ 600	\$ -
Fixed costs traceable to Firm (p 22)	30,700	20,000	24,470	1,500	6,968
Fixed costs traceable to territory but joint to products in the territory	\$ 30,700	\$ 8,000	\$ 10,000	\$ 900	\$ 6,968

Using the word descriptions from page 22 to make the computation of fixed costs traceable to the firm but not to the territories:

Production costs traceable to		
Company	\$ 16,200	<i>Not traceable to territories</i>
Products	14,500	<i>Not traceable to territories</i>
Marketing costs		
Admin costs traceable to:		
Company	8,000	<i>Not traceable to territories</i>
Ad/Promo--Traceable to		
Company	5,570	<i>Not traceable to territories</i>
Pdt. at Company Level	4,430	<i>Not traceable to territories</i>
Other--Territory		
Company	900	<i>Not traceable to territories</i>
Administration costs		
Other	6,000	<i>Not traceable to territories</i>
Total fixed costs traceable to firm but joint to territories	\$ 55,600	

13. How much will budgeted company profit decline for the month of July if the Majestic Table is dropped from the product line?

All of the marginal income for the Table for July would be "lost" (p31)	\$ 52,158
If none of the FC's are avoidable, which seems highly unlikely, then profits would drop by that amount (the \$52,158).	
It seems likely, however, that at least some of the FC's would be avoidable	
Production FC's (detailed on yellow p 20 are probably avoidable	6,800
Fixed marketing costs (p 31) are probably also avoidable	7,770

Net decrease in profit	\$ (37,588)
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14. Why do production fixed costs appear on the contribution schedules on pages 29, 30, and 31, but not on any of the other contribution schedules?

For each product, the fixed costs in the related cutting department are the only traceable production fixed costs, and those production fixed costs are traceable only to ALL units of that product, not to individual units.* Pages 29, 30 and 31 are the only contribution schedules including ALL UNITS of a given product.

*For example, fixed costs in stool cutting in July are traceable to ALL footstools produced in July. Those fixed costs are not traceable to the footstools sold in either one of the two divisions.

15. Compute the total dollar sales required to break even for the six month period for K&R Products, Inc.

Assuming, that mix doesn't change (we have to assume something)

Page 22: MI ratio for the six months

$$\begin{array}{r} \text{Total MI} \\ \text{Total sales} \end{array} = \frac{\$ 648,748}{\$ 1,931,030} = 0.3359596$$

To compute BEP, divide FC by the MI ratio:

$$\begin{array}{r} \text{Total FC} \\ \text{MI ratio} \end{array} = \frac{\$ 531,338}{0.3359596} = \boxed{\$ 1,581,553}$$

16. Suppose the company decides to spend another \$5,000 monthly on advertising, how much will the total six-month sales have to increase to cover this added expense?

$$\frac{(5,000 \times 6)}{0.3359596} = \boxed{\$ 89,296} \text{ necessary increase in sales}$$

17. Assume the company sells exactly the same number of units of each product (i.e., unit sales of each product make up one-third of the total units sold) in July, what is the break-even dollar sales for July?

This is a new product mix, so we must compute a new weighted average MI ratio. The ratio from Questions 15 and 16 does not apply.)

Hypothetical batch: 1 unit of each product

	Footstool	Bench	Table	Sum
MI per unit*	2.880	24.500	33.650	61.030
Selling prices (from Q 8)	16.000	50.000	105.000	171.000

Now, divide total MI by total sales: $54.191/171 = 0.316901$
[MI ratio higher than that in Q's 15 and 16 because the new mix includes fewer of the low-MI footstools.]

$$\text{Dividing total FC by MI ratio to get the BEP: } 83,638/.316905 = \boxed{\$ 234,345.37}$$

Continued, next page

17, continued

*MI per unit: Find any contribution budget devoted to a single product (page 29, for instance), and divide the MI by the unit sales.

*Alternatively,

	Selling price	-	Production cost per unit (pp 7-9)	-	Comm and Trans .07*selling price	=	MI per Unit
S	\$ 16.000		\$ 12.000		\$ 1.120		\$ 2.880
B	50.000		22.000		3.500		24.500
T	105.000		64.000		7.350		33.650

18. Compute the break-even sales in units for the Foot Stool.

Assuming this is for the entire six months:

$$\begin{array}{r} \text{FC, p29} \\ \text{MI ratio} \end{array} \quad \frac{\$ 63,200.00}{(2.240/16.000)} = \$ 351,111$$

19. Compute a new break-even point for the West Territory if the unit costs for all three products increase by one dollar.

If unit costs increase by \$1 per unit for all units sold, West Territory MI will drop by

S	\$ 1.00	x	5,105	=	\$ 5,105
B	\$ 1.00	x	4,415	=	4,415
T	\$ 1.00	x	5,870	=	5,870
			Amount MI drops		<u>\$ 15,390</u>

New MI ratio equals new MI divided by sales:

$$\frac{\begin{array}{r} \text{Old MI} \\ 320,395 \end{array} - \begin{array}{r} \text{Drop} \\ 15,390 \end{array}}{918,780} = 0.331967$$

Sales (p 24)

$$\text{FC, page 24} \rightarrow \frac{\$ 100,320}{0.331967} = \boxed{\$ 302,198.36}$$

new BEP

20. Look at the projected income statement for the company for July, page 22 For each individual item of fixed costs (each line), tell whether that fixed costs item appears on page 22 only or whether it appears on some other contribution schedule(s). If the cost does appear on some other contribution schedule(s), identify the other schedule(s).

Fixed costs:

Production costs traceable to

Company	\$ 16,200	Page 22only*
Products	14,500	P 29 (\$3,600), p 30 (4,100) p 31 (\$6,800)

Marketing costs

Administrative costs traceable to

Company	8,000	Page 22 only*
Territories	7,700	P 23 (\$3,450), p 24 (\$4,250)
Salespeople	4,300	P 25 (\$800), p 26 (\$900), p 27 (\$1,200), p 28 (\$1,400)

Ad/Promo costs traceable to:

Company	5,570	Page 22 only*
Territories	12,500	P 23 (\$950 + \$3,550), p 24 (\$1,450 + \$6,550)
Salespeople	1,970	P 23 (\$750) + p 24 (\$1,220),
Pdt. at co. level	4,430	P 29 (\$3,000), p 30 (\$1,200), p 31 (\$230)

Other costs traceable to

Company	900	Page 22only*
Territories	600	P 23 (\$300), p 24 (\$300)

Administrative costs

Interest expense	968	Page 22 only*
Other	6,000	Page 22 only*

*These costs are traceable to the company, but NOT to territories, salespeople, or products.

21. Ignore the constraint report for this question
 a. What is the minimum number of tables that K&R must plan to sell in order to cover all the budgeted direct (traceable) costs of tables for the six-month period? Show computations to support your answer.

$$\text{p 31 Total fixed costs traceable to tables } \$ \underline{88,220} = \underline{2,621.69}$$

$$\text{Divided by contribution margin per } \underline{33.65}$$

- b. How many tables would K&R have to plan to sell in order to double the budgeted product contribution for tables for the month of October? Show computations to support your answer.

$$\text{p 31 Additional product contribution req. } \$ \underline{37,115} = \underline{1,102.97}$$

$$\text{Divided by Cm per table } \underline{33.65} \quad \text{MORE tables}$$

Current volume for October (p 31)	1,530.00
Additional units required	1,102.97
Total table sales needed	<u>2,632.97</u> units

22. If Mary Smith sells 100 more tables in October, what will be the impact on each of the items listed? In each case, justify your answer. Ignore the constraint report for this question.
 a. Mary's budgeted segment contribution for August. Give the amount of the change, indicate increase or decrease, and justify your answer.

Contribution margin per unit	33.65
Additional volume is	100 units
Mary's increased CM	<u>\$ 3,365</u>

- b. West Territory budgeted segment contribution for August. Give the amount of the change, indicate increase or decrease, and justify your answer.

Increase of \$3,365, as computed in a.

- c. East Territory budgeted segment contribution for August. Give the amount of the change, indicate increase or decrease, and justify your answer.

No change. Mary doesn't sell in the East territory.

- d. K&R Company's budgeted pretax income for August. Give the amount of the change, indicate increase or decrease, and justify your answer.

Increase of \$3,365, as computed in a.

23. What is the expected marginal income for one table?

\$ 33.65 Computations in Question 17

24. On page yellow p 2 there is a \$5,800 unfavorable variance for "Vice-president's Office." How was the \$5,800 computed?

The \$5,800 is an unfavorable variance for costs that are the responsibility of the marketing vice president.

Budgeted amount would be the fixed costs on page 22 that are marketing fixed costs traceable at the company level, not traceable to territories or to salespeople:

Marketing:	
Admin.	\$ 8,000
Ad/Promo	5,570
	4,430
Other	<u>900</u>
Total budgeted	\$ 18,900
Actual (p 79)	(24,700)
Unfavorable variance	<u>\$ (5,800)</u>

25. **Why do you think that the Material Price Variance appears (yellow page 3) on the line for Vice-President's Office, rather than on the line for Plant?**

Because someone in the Vice-President's office is responsible for purchasing.

26. **On yellow page 10, the Finishing Department's budget column shows an entry for Blue Paint, \$4,888. How was the \$4,888 computed? Why are there two entries for blue paint?**

This is the budgeted cost of blue paint for the actual number of Foot Stools finished in July:

Foot Stools finished in July (p75)	2,600	<i>The second blue paint figure</i>
Budgeted blue paint per unit (p 7)	\$ 1.88	<i>relates to benches, which are</i>
	<u>\$ 4,888.00</u>	<i>also painted blue.</i>

27. **On yellow page 20, the reported actual direct labor hours for Table Cutting total 860. Exactly what does this tell you about the performance of the Table Cutting Department in July? Explain.**

It tells you "exactly" nothing.

Yellow page 9 tells us that the 860 hours exceed the standard number of hours for the actual output achieved. (Unfav labor efficiency variance.)

The important thing is whether the Table Cutting Department did its best under the circumstances -- and we know NOTHING about that. What caused the problem? What was the quality of the units produced? Etc., etc.

28. **On yellow page 26, there is a figure of \$8,000 for "Company Administration." How does this information affect any of the performance reports (yellow pages 1-13)?**

The \$8,000 is actual July cost in the president's office. Budgeted cost for July is \$6,000 (Administration, page 22).

The resulting \$2,000 unfavorable cost variance appears on yellow page 1, under "Admin." The president didn't control the costs in his office in July, apparently. [Before condemning the president, however, we'd need to know what circumstances were involved in the cost overrun.]

29. **How many maintenance labor hours are used in the Bench Cutting department for each labor hour worked in that department?**

On yellow p 22: Maintenance department variable cost is \$15 for each maintenance labor hour worked. [Notice that this refers to maintenance labor hours, not direct labor hours.] Only traceable maintenance costs are passed on to producing departments!

On yellow p 19, bench cutting's detailed overhead expense budget includes \$1.50 of maintenance cost for each direct labor hour worked, so this department must use 1/10 maintenance labor hour for each direct labor hour.

[Although the question isn't asked, as similar comparison shows that finishing uses 1/20 maintenance hour for each direct labor hour.]