

Cash Flow Analysis
Modified UCA Cash Flow Format

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Analyzing Cash Flows

Selected income statement data and a cash flow statement in the UCA format are provided below for 5 cases. Each case is a variation on the income and cash flow statement for the same company. In fact, in every case, the company reports the same net income.

Use the data provided to draw what conclusions you can about the company's ability to service its outstanding long-term debt.

What additional questions are raised and what additional information would be helpful in answering them?

Income Statement Statement Data

Cases 1 - 3

Amounts in (000's)

Sales		\$ 8,000
Cost of Goods Sold (incl. dep'n of \$800)	\$ 4,960	
SG&A	<u>1,920</u>	<u>6,880</u>
Operating Income		1,120
Other Income (Expense)	140	
Interest Expense	<u>(240)</u>	<u>(100)</u>
Pretax Income		1,020
Tax Provision		<u>250</u>
Net Income		\$ <u><u>770</u></u>

Case 4

Amounts in (000's)

Sales		\$ 8,000
Cost of Goods Sold (incl. dep'n of \$800)	\$ 5,600	
SG&A	<u>2,240</u>	<u>7,840</u>
Operating Income		160
Other Income (Expense)	1,100	
Interest Expense	<u>(240)</u>	<u>860</u>
Pretax Income		1,020
Tax Provision		<u>250</u>
Net Income		\$ <u><u>770</u></u>

CASE 1: Cash Flow Statement (000's)

Revenue	\$ 8,000	
Change in receivables	<u>(500)</u>	
Cash from revenue		\$ 7,500
Cost of revenue (excl. depn of 800)	(4,160)	
Change in Inventory	(300)	
Change in A/P	<u>200</u>	
Cash cost of revenue		<u>(4,260)</u>
Cash gross margin		3,240
Cash Operating Expense		<u>(1,920)</u>
<u>Core operating cash flow</u>		<u>1,320</u>
Other recurring cash receipts (payments)		(18)
Total Tax Provision	(250)	
Inc (Dec) in Deferred Tax Liability	40	
Inc (Dec) in Income Taxes Payable	<u>(42)</u>	
<u>Income Taxes Paid</u>		<u>(252)</u>
<u>Cash available for debt service</u>		<u>1,050</u>
Interest paid		<u>(240)</u>
<u>Operating cash flow</u>		<u>810</u>
Capital Expenditures		(1,000)
<u>Free cash flow</u>		<u>(190)</u>
Investments		0
<u>Change in cash and equivalents before financing</u>		<u>(190)</u>
Required principal payments on LT debt		(310)
Dividends on common stock		
Short-term debt		
Long-term debt financing		500
Equity financing		<u>0</u>
<u>Financing transactions</u>		<u>190</u>
<u>Change in cash and equivalents after financing</u>		<u>\$ 0</u>

CASE 2: Cash Flow Statement (000's)

Revenue	\$ 8,000	
Change in receivables	<u>(1,800)</u>	
Cash from revenue		\$ 6,200
Cost of revenue (excl. depn of 800)	(4,160)	
Change in Inventory	(1,200)	
Change in A/P	<u>600</u>	
Cash cost of revenue		<u>(4,760)</u>
Cash gross margin		1,440
Cash Operating Expense		<u>(1,920)</u>
Core operating cash flow		<u>(480)</u>
Other recurring cash receipts (payments)		(18)
Total Tax Provision	(250)	
Inc (Dec) in Deferred Tax Liability	40	
Inc (Dec) in Income Taxes Payable	<u>(42)</u>	
Income Taxes Paid		<u>(252)</u>
Cash available for debt service		<u>(750)</u>
Interest paid		<u>(240)</u>
Operating cash flow		<u>(990)</u>
Capital Expenditures		(1,000)
Free cash flow		<u>(1,990)</u>
Investments		0
Change in cash and equivalents before financing		<u>(1,990)</u>
Required principal payments on LT debt		(310)
Dividends on common stock		
Short-term debt		1,300
Long-term debt financing		1,000
Equity financing		<u>0</u>
Financing transactions		<u>1,990</u>
Change in cash and equivalents after financing		<u>\$ 0</u>

CASE 3: Cash Flow Statement (000's)

Revenue	\$ 8,000	
Change in receivables	<u>(500)</u>	
Cash from revenue		\$ 7,500
Cost of revenue (excl. depn of 800)	(4,160)	
Change in Inventory	(300)	
Change in A/P	<u>200</u>	
Cash cost of revenue		<u>(4,260)</u>
Cash gross margin		3,240
Cash Operating Expense		<u>(1,920)</u>
<u>Core operating cash flow</u>		<u>1,320</u>
Other recurring cash receipts (payments)		(18)
Total Tax Provision	(250)	
Inc (Dec) in Deferred Tax Liability	(950)	
Inc (Dec) in Income Taxes Payable	<u>(42)</u>	
<u>Income Taxes Paid</u>		<u>(1,242)</u>
<u>Cash available for debt service</u>		<u>60</u>
Interest paid		<u>(240)</u>
<u>Operating cash flow</u>		<u>(180)</u>
Capital Expenditures		0
<u>Free cash flow</u>		<u>(180)</u>
Investments		0
<u>Change in cash and equivalents before financing</u>		<u>(180)</u>
Required principal payments on LT debt		(310)
Dividends on common stock		
Short-term debt		
Long-term debt financing		490
Equity financing		<u>0</u>
<u>Financing transactions</u>		<u>180</u>
<u>Change in cash and equivalents after financing</u>		<u>\$ 0</u>

CASE 4: Cash Flow Statement (000's)

Revenue	\$ 8,000	
Change in receivables	<u>(500)</u>	
Cash from revenue		\$ 7,500
Cost of revenue (excl. depn of 800)	(4,800)	
Change in Inventory	(300)	
Change in A/P	<u>200</u>	
Cash cost of revenue		<u>(4,900)</u>
Cash gross margin		2,600
Cash Operating Expense		<u>(2,240)</u>
<u>Core operating cash flow</u>		<u>360</u>
Other recurring cash receipts (payments)		942
Total Tax Provision	(250)	
Inc (Dec) in Deferred Tax Liability	40	
Inc (Dec) in Income Taxes Payable	<u>(42)</u>	
<u>Income Taxes Paid</u>		<u>(252)</u>
<u>Cash available for debt service</u>		<u>1,050</u>
<u>Interest paid</u>		<u>(240)</u>
<u>Operating cash flow</u>		<u>810</u>
<u>Capital Expenditures</u>		<u>0</u>
<u>Free cash flow</u>		<u>810</u>
<u>Investments</u>		<u>0</u>
<u>Change in cash and equivalents before financing</u>		<u>810</u>
Required principal payments on LT debt		(310)
Dividends on common stock		
Short-term debt		
Long-term debt financing		(500)
Equity financing		<u>0</u>
<u>Financing transactions</u>		<u>(810)</u>
<u>Change in cash and equivalents after financing</u>		<u>\$ 0</u>

Some Comments on the Cash Flow Cases

Case 1:

- Company is positive core operating cash flow, and operating cash flow. Cash available for debt service is sufficient to pay interest and required principal payments on LT debt.
- Capital expenditures of \$1,000 are financed with internal cash of \$810 and new financing of \$190. Cash generated from new investments can be earmarked to service the incremental long-term debt financing.
- Free cash flow is not positive. Co. can finance capital expenditures sufficient to replace fixed assets consumed in operations (\$800) with operating cash flow, but not capital expenditures needed to grow fixed asset base (\$1,000). This is not an unusual cash flow profile.

Case 2:

- Company is generating negative core operating cash flow. In addition, cash available for debt service is insufficient to service interest and required principal payments. Reasons for the cash shortfall can be traced to growth in A/R and Inventory, offset only slightly by the growth in A/P.
 - Is the growth in these account balances consistent with the growth in operations? Is it due to declining operating efficiency? Is it a seasonal phenomenon?
 - Working capital needs are being financed with \$1,300 in short-term debt financing (e.g., secured by A/R and/or Inventory) and from internal sources.
 - This viable financing plan assuming increases in A/R and Inventory are seasonal. If the cash needs are growth-related, longer-term financing should be sought.
- Capital expenditures of \$1,000 are financed with new long-term debt financing of \$1,000.

Case 3:

- Company is generating insufficient Cash available for debt service to service interest and required principal payments. The primary reason for the cash shortfall can be traced to the \$950 decrease in the deferred tax liability.
 - Is the amount out of the ordinary?
 - What does it potentially say about future capital expenditures?
 - More information is needed.
 - Normal level of deferred tax provision.
 - Management's capital expenditure plans.
- Additional long-term debt was used to finance the cash shortfall, which was mostly a refinancing of the current portion.
 - Not a long-term viable solution, unless deferred tax cash drain changes.
 - New capital expenditures (and more cash) are likely needed for this to occur.

Case 4:

- Company is less profitable than in cases 1 - 3. While it is generating sufficient Cash available for debt service to service interest and current portion, the primary reason is so-called "Other recurring cash receipts."
 - What is the source of the other income?
- The cash flow statement indicates a cause for concern even though long-term debt was reduced during the current year.
 - If other income is non-recurring, the company will, in the future, be unable to service interest and the current portion.

One Last Example Income Statement Data

Case 5

Amounts in (000's)

Sales		\$ 8,000
Cost of Goods Sold (incl. dep'n of \$800)	\$ 5,600	
SG&A	<u>2,240</u>	<u>7,840</u>
Operating Income		160
Other Income (Expense)	0	
Interest Expense	<u>(240)</u>	<u>(240)</u>
Pretax Income		(80)
Tax Provision (benefit)		<u>(20)</u>
Net Loss		\$ <u>(60)</u>

CASE 5: Cash Flow Statement (000's)

Revenue	\$ 8,000	
Change in receivables	<u>500</u>	
Cash from revenue		\$ 8,500
Cost of revenue (excl. depn of 800)	(4,800)	
Change in Inventory	300	
Change in A/P	<u>(200)</u>	
Cash cost of revenue		<u>(4,700)</u>
Cash gross margin		3,800
Cash Operating Expense		<u>(2,240)</u>
Core operating cash flow		<u>1,560</u>
Other recurring cash receipts		0
Total Tax Provision	20	
Inc (Dec) in Deferred Tax Liability	0	
Inc (Dec) in Income Taxes Payable	<u>(20)</u>	
Income Taxes Paid		<u>(0)</u>
Cash available for debt service		<u>1,560</u>
Interest paid		<u>(240)</u>
Operating cash flow		<u>1,320</u>
Capital Expenditures		0
Free cash flow		<u>1,320</u>
Investments		0
Change in cash and equivalents before financing		<u>1,320</u>
Required principal payments on LT debt		(310)
Dividends on common stock		(500)
Short-term debt		0
Long-term debt financing		0
Equity financing		<u>(510)</u>
Financing transactions		<u>(1,320)</u>
Change in cash and equivalents after financing		<u>\$ 0</u>

Case 5:

- Company is losing money, though generating ample cash flow to service interest and current portion.
- Source of operating cash flow is depreciation and declines in accounts receivable and inventory. Apparently, the company is liquidating itself.
- Long-term debt service capacity would require a return to profitable operations.

Analyzing Core Operating Cash Flow Using Ratios to Identify Borrowing Causes

Key determinants of changes in the components of Core operating cash flow:

- Growth - a pervasive underlying borrowing cause which impacts all other cash flow determinants.
- Profitability Measures:
 - $\text{Gross Margin \%} = \text{Gross Margin} / \text{Revenue}$
 - $\text{SG\&A \%} = \text{SG\&A} / \text{Revenue}$
- Operating Efficiency Measures:
 - $\text{Receivables in days} = \text{A/R} / \text{Revenue per Day}$
 - Note: $\text{Revenue per Day} = \text{Revenue} / 365$
 - $\text{Inventory in days} = \text{Inventory} / \text{Revenue per Day}$
 - $\text{Payables in days} = \text{A/P} / \text{Revenue per Day}$

Cash Flow Variance Analysis

The key determinants of changes in the components of Core operating cash flow can be used to perform a two-way cash flow variance analysis.

That is, reasons for changes in the components of Core operating cash flow can be identified as being caused by 1) growth or 2) an inherent change in the underlying profitability or efficiency of the firm.

In measuring the impact on Core operating cash flow caused by growth, prior year profitability and efficiency measures are assumed to remain unchanged in the current year, allowing the cash impact of growth to be isolated.

In measuring the impact on Core operating cash flow caused by changes in profitability or efficiency measures, the change from the prior year in the relevant profitability or efficiency measure is applied to current year results.

On the following pages, selected financial statement and cash flow data for Industrial Services, Inc., a growth firm, are provided.

Industrial Services, Inc.
 Comparative Income Statements
 Years Ended Mar. 31, 2018 and 2017
 (Amounts in 000's)

	<u>2018</u>	<u>2017</u>
Sales	\$15,104	\$12,800
Cost of Goods Sold (incl. dep'n of \$200 in both years)	<u>9,062</u>	<u>7,936</u>
Gross Profit	6,042	4,864
SG&A	<u>4,833</u>	<u>3,840</u>
Pretax Operating Income	1,209	1,024
Tax Provision	<u>399</u>	<u>389</u>
Net Income	\$ <u>810</u>	\$ <u>635</u>

Industrial Services, Inc.
 Comparative Balance Sheets
 Years Ended Mar. 31, 2018 and 2017
 (Amounts in 000's)

	<u>2018</u>	<u>2017</u>
Cash	\$ 895	\$ 2,100
A/R, net	2,979	2,104
Inventory	<u>4,469</u>	<u>3,913</u>
Current Assets	8,343	8,117
PP&E, net	<u>3,595</u>	<u>3,795</u>
Total Assets	\$ <u>11,938</u>	\$ <u>11,912</u>
A/P	\$ 596	\$ 1,348
Taxes Payable	<u>36</u>	<u>104</u>
Current Liabilities	632	1,452
Deferred Tax Liability	496	460
Common Stock	4,000	4,000
Retained Earnings	<u>6,810</u>	<u>6,000</u>
Total Liab. and S/H Equity	\$ <u>11,938</u>	\$ <u>11,912</u>

Industrial Services Cash Flow Statement
Year Ended March 31, 2018

Revenue	\$ 15,104	
Change in receivables	<u>(875)</u>	
Cash from revenue		\$ 14,229
Cost of revenue (excl. depn of 200)	(8,862)	
Change in Inventory	(556)	
Change in A/P	<u>(752)</u>	
Cash cost of revenue		<u>(10,170)</u>
Cash gross margin		4,059
Cash Operating Expense		<u>(4,833)</u>
Core operating cash flow		<u>(774)</u>
Other recurring cash receipts		0
Total Tax Provision	(399)	
Inc (Dec) in Deferred Tax Liability	36	
Inc (Dec) in Income Taxes Payable	<u>(68)</u>	
Income Taxes Paid		<u>(431)</u>
Cash available for debt service		<u>(1,205)</u>
Interest paid		<u>(0)</u>
Operating cash flow		<u>(1,205)</u>
Capital Expenditures		0
Free cash flow		<u>(1,205)</u>
Investments		0
Change in cash and equivalents before financing		<u>(1,205)</u>
Required principal payments on LT debt		(0)
Dividends on common stock		
Short-term debt		
Long-term debt financing		
Financing transactions		<u>0</u>
Change in cash and equivalents after financing		<u>\$ (1,205)</u>

Key points noted in the accompanying financial statements and notes:

- Sales and earnings are up 18% and 28% respectively in 2018 over 2017.
- The company is profitable, generating an operating profit of \$1,209 in 2018 and net income of \$810.
- Core operating cash flow was an outflow of \$774.
- Operating cash flow was an outflow of \$1,205 and corresponded with the decrease in cash. The company financed its cash needs internally.

In discussions with management, the following was learned:

- The increase in SG&A was due mainly to an increase in marketing costs accompanying a new sales campaign.
- The cash balance is uncomfortably low and insufficient to finance an anticipated growth in working capital needed to support future growth in operations.
- Additions to PP&E are needed to increase production levels needed to support anticipated sales increases.
- The company took advantage of vendor cash discounts for early payment for the first time in 2018.

Required:

- 1) Use two-way cash flow variance analysis to determine the causes of the cash flow drain. Specifically, for the change in each component of Core operating cash flow, determine the extent to which 1) growth and 2) a change in the firm's underlying profitability or efficiency was the explanatory factor.
- 2) What is the importance of determining the extent to which growth or changes in profitability and efficiency contributed to the firm's cash needs?
- 3) If the firm is generating an outflow for Core operating cash flow, how can it service new financing needed for PP&E additions?

Industrial Services, Inc.
Cash Flow Variance Analysis
Years Ended Mar. 31, 2018 and 2017

Selected Financial Statement Data:

	<u>2018</u>	<u>2017</u>	<u>Inc (Dec)</u>
Sales	\$ 15,104	\$ 12,800	\$ 2,304
Cost of Goods Sold (excl. depn of 200)	8,862	7,736	1,126
Gross Margin (excl. depn)	6,242	5,064	1,178
SG&A	4,833	3,840	993
Pretax Income	1,209	1,024	185
A/R, net	2,979	2,104	875
Inventory	4,469	3,913	556
A/P	596	1,348	(752)

Profitability Measures:

Gross margin -

Gross margin% (Gross margin / Revenue):

	<u>2018 (Yr2)</u>	<u>2017 (Yr1)</u>	<u>Inc (Dec)</u>
Revenue	15,104	12,800	2,304
Gross margin	6,242	5,064	1,178
Gross margin%	41.33%	39.56%	1.77%

Cash Impact of Growth =

 $\Delta\text{Rev inc} \times \text{Yr 1 GM}\%$ Cash Impact of $\Delta\text{GM}\%$ = $\text{Yr2 Rev} \times \Delta\text{GM}\% \text{ inc}$

Cash Impact of Growth =

 $2,304 \times .3956 = 911$ Cash Impact of $\Delta\text{GM}\%$ = $15,104 \times .0177 = \underline{267}$

Total Cash Impact

1,178

Profitability Measures:

SG&A -

SG&A% (SG&A / Revenue):

	<u>2018 (Yr2)</u>	<u>2017 (Yr1)</u>	<u>Inc (Dec)</u>
Revenue	15,104	12,800	2,304
SG&A	4,833	3,840	993
SG&A%	32.00%	30.00%	2.00%

Cash Impact of Growth =

 $(\Delta\text{Rev inc}) \times \text{Yr1 SG\&A}\%$ Cash Impact of $\Delta\text{SG\&A}\%$ = $\text{Yr2 Rev} \times (\Delta\text{SG\&A}\% \text{ inc})$ (Outflow)

Cash Impact of Growth =

 $(2,304) \times .30 = (691)$ Cash Impact of $\Delta\text{SG\&A}\%$ = $15,104 \times (.02) = \underline{(302)}$

Total Cash Impact

(993)

Operating Efficiency Measures:

Accounts receivable –

Days Receivables (A/R / Revenue per Day):

(Note: Revenue per Day = Revenue / 365)

	<u>2018 (Yr2)</u>	<u>2017 (Yr1)</u>	<u>Inc (Dec)</u>
Revenue	15,104	12,800	2,304
Revenue per Day	41.381	35.068	6.313
A/R	2,979	2,104	875
Days Receivables	71.989	59.998	11.991

Cash Impact of Growth =	(Δ Rev per Day inc) x Yr1 Days Rec.	
Cash Impact of Δ Days Rec =	Yr2 Rev per Day x (Δ Days Rec. inc)	(Outflow)
Cash Impact of Growth =	(6.313) x 59.998 =	(379)
Cash Impact of Δ Days Rec =	41.381 x (11.991) =	<u>(496)</u>
Total Cash Impact		(875)

Inventory –

Days Inventory (Inventory / Revenue per Day):

	<u>2018 (Yr2)</u>	<u>2017 (Yr1)</u>	<u>Inc (Dec)</u>
Revenue	15,104	12,800	2,304
Revenue per Day	41.381	35.068	6.313
Inventory	4,469	3,913	556
Days Inventory	107.996	111.583	(3.587)

Cash Impact of Growth =	(Δ Rev per Day inc) x Yr1 Days Inv.	
Cash Impact of Δ Days Inv =	Yr2 Rev per Day x (Δ Days Inv. inc)	(Outflow)
Cash Impact of Growth =	(6.313) x 111.583 =	(704)
Cash Impact of Δ Days Inv =	41.381 x 3.587 =	<u>148</u>
Total Cash Impact		(556)

Accounts Payable –

Days Payables (A/P / Revenue per Day):

	<u>2018 (Yr2)</u>	<u>2017 (Yr1)</u>	<u>Inc (Dec)</u>
Revenue	15,104	12,800	2,304
Revenue per Day	41.381	35.068	6.313
A/P	596	1,348	(752)
Days Payables	14.403	38.440	(24.037)

Cash Impact of Growth =

$\Delta\text{Rev per Day inc} \times \text{Yr1 Days Pay.}$

Cash Impact of $\Delta\text{Days Pay} =$

$\text{Yr2 Rev per Day} \times \Delta\text{Days Pay.inc}$

(Outflow)

Cash Impact of Growth =

$6.313 \times 38.440 = 243$

Cash Impact of $\Delta\text{Days Pay} =$

$41.381 \times (24.037) = (995)$

Total Cash Impact

(752)

To facilitate organization of the financial statement data and statistics needed to isolate the cash impact of growth and changes in profitability and efficiency, the following worksheet is provided.

The blank worksheet is followed by a completed worksheet for Industrial Services, Inc.

CASH IMPACT WORKSHEET

Name of Company: _____

Summary of Key Statistics:

	Yr2: _____	Yr1: _____	<u>Inc. (Dec.)</u>
Revenue	_____	_____	_____
Revenue per Day	_____	_____	_____
CGS (excl. depn)	_____	_____	_____
Gross margin (excl. depn)	_____	_____	_____
GM% (excl. depn)	_____	_____	_____
SG&A expense (excl. depn)	_____	_____	_____
SG&A% (excl. depn)	_____	_____	_____
A/R	_____	_____	_____
Days Receivables	_____	_____	_____
Inventory	_____	_____	_____
Days Inventory	_____	_____	_____
A/P	_____	_____	_____
Days Payables	_____	_____	_____

CASH IMPACT WORKSHEET (Cont'd)

Name of Company: _____

Year2: _____

<u>Key Ratios:</u>	<u>Formula:</u>	<u>Inflow (Outflow):</u>
Gross margin (GM%):		
Cash Impact of Growth	$\Delta Rev_{inc} \times Yr\ 1\ GM\%$	_____
Cash Impact of $\Delta GM\%$	$Yr2\ Rev \times \Delta GM\%_{inc}$	_____
Inc (Dec) Gross margin		_____
SG&A Expense (SG&A%):		
Cash Impact of Growth	$(\Delta Rev_{inc}) \times Yr1\ SG\&A\%$	_____
Cash Impact of $\Delta SG\&A\%$	$Yr2\ Rev \times (\Delta SG\&A\%_{inc})$	_____
Dec (Inc) SG&A Expense		_____
A/R (Days Receivables):		
Cash Impact of Growth	$(\Delta Rev\ per\ Day_{inc}) \times Yr1\ Days\ Rec$	_____
Cash Impact of $\Delta Days\ Rec$	$Yr2\ Rev\ per\ Day \times (\Delta Days\ Rec_{inc})$	_____
Dec (Inc) A/R		_____
Inventory (Days Inventory):		
Cash Impact of Growth	$(\Delta Rev\ per\ Day_{inc}) \times Yr1\ Days\ Inv$	_____
Cash Impact of $\Delta Days\ Inv$	$Yr2\ Rev\ per\ Day \times (\Delta Days\ Inv_{inc})$	_____
Dec (Inc) Inventory		_____
A/P (Days Payables):		
Cash Impact of Growth	$\Delta Rev\ per\ Day_{inc} \times Yr1\ Days\ Pay$	_____
Cash Impact of $\Delta Days\ Pay$	$Yr2\ Rev\ per\ Day \times \Delta Days\ Pay_{inc}$	_____
Inc (Dec) A/P		_____

CASH DRIVERS REPORT

Critical Ratios:	<u>Yr 2</u>	<u>Yr 1</u>
Net Sales Growth %	_____	
Gross Margin %	_____	_____
SG&A %	_____	_____
Operating cushion (Gross - SG&A)%	_____	_____
Receivables in Days	_____	_____
Inventory in Days	_____	_____
Payables in Days	_____	_____
Cash cycle	_____	_____

Breakdown of Cash Impact

Cash impact of growth:	<u>Yr 2</u>
Cash impact of growth on gross margin	_____
Cash impact of growth on SG&A	_____
Cash impact of growth on operating cushion	_____
Cash impact of growth on receivables	_____
Cash impact of growth on inventory	_____
Cash impact of growth on accounts payable	_____
Cash impact of growth on operating working capital	_____
Total cash impact of growth	_____
Cash impact of changes in operating cushion and operating working capital days:	
Cash impact of change in gross margin	_____
Cash impact of change in SG&A%	_____
Cash impact of change in operating cushion	_____
Cash impact of change in receivables days	_____
Cash impact of change in inventory days	_____
Cash impact of change in payables days	_____
Cash impact of change in operating working capital days	_____
Cash impact of change in operating cushion & wk cap days	_____

CASH IMPACT WORKSHEET

Name of Company: Industrial Services, Inc.

Summary of Key Statistics:

	Yr2:2018	Yr1:2017	<u>Inc. (Dec.)</u>
Revenue	15,104	12,800	2,304
Revenue per Day	41.381	35.068	6.313
CGS (excl. depn)	8,862	7,736	1,126
Gross margin (excl. depn)	6,242	5,064	1,178
GM% (excl. depn)	41.33%	39.56%	1.77%
SG&A expense (excl. depn)	4,833	3,840	993
SG&A% (excl. depn)	32.00%	30.00%	2.00%
A/R	2,979	2,104	875
Days Receivables	71.989	59.998	11.991
Inventory	4,469	3,913	556
Days Inventory	107.996	111.583	(3.587)
A/P	596	1,348	(752)
Days Payables	14.403	38.440	(24.037)

CASH IMPACT WORKSHEET (Cont'd)

Name of Company: Industrial Services, Inc.

Year2: 2018

<u>Key Ratios:</u>	<u>Formula:</u>	<u>Inflow (Outflow):</u>
Gross margin (GM%):		
Cash Impact of Growth	$\Delta\text{Rev}_{inc} \times \text{Yr 1 GM}\%$	911
Cash Impact of $\Delta\text{GM}\%$	$\text{Yr2 Rev} \times \Delta\text{Rev}\%_{inc}$	<u>267</u>
Inc (Dec) Gross margin		1,178
SG&A Expense (SG&A%):		
Cash Impact of Growth	$(\Delta\text{Rev}_{inc}) \times \text{Yr1 SG\&A}\%$	(691)
Cash Impact of $\Delta\text{SG\&A}\%$	$\text{Yr2 Rev} \times (\Delta\text{SG\&A}\%_{inc})$	<u>(302)</u>
Dec (Inc) SG&A Expense		(993)
A/R (Days Receivables):		
Cash Impact of Growth	$(\Delta\text{Rev per Day}_{inc}) \times \text{Yr1 Days Rec}$	(379)
Cash Impact of $\Delta\text{Days Rec}$	$\text{Yr2 Rev per Day} \times (\Delta\text{Days Rec}_{inc})$	<u>(496)</u>
Dec (Inc) A/R		(875)
Inventory (Days Inventory):		
Cash Impact of Growth	$(\Delta\text{Rev per Day}_{inc}) \times \text{Yr1 Days Inv}$	(704)
Cash Impact of $\Delta\text{Days Inv}$	$\text{Yr2 Rev per Day} \times (\Delta\text{Days Inv}_{inc})$	<u>148</u>
Dec (Inc) Inventory		(556)
A/P (Days Payables):		
Cash Impact of Growth	$\Delta\text{Rev per Day}_{inc} \times \text{Yr1 Days Pay}$	243
Cash Impact of $\Delta\text{Days Pay}$	$\text{Yr2 Rev per Day} \times \Delta\text{Days Pay}_{inc}$	<u>(995)</u>
Inc (Dec) A/P		(752)

CASH DRIVERS REPORT

Critical Ratios:	<u>Yr 2 (2018)</u>	<u>Yr 1(2017)</u>
Net Sales Growth % p.14 (15,104–12,800 = 2,304) (2,304/12,800 = 18%)	18%	
Gross Margin % (excl. depn) p. 19	41.33%	39.56%
SG&A % (excl. depn) p. 19	32.00%	30.00%
Operating cushion (Gross - SG&A)% (excl. depn)	9.33%	9.56%
Receivables in Days p. 20	71.989	59.998
Inventory in Days p. 20	107.996	111.583
Payables in Days p. 21	<u>14.403</u>	<u>38.440</u>
Cash cycle	165.58	133.14

Breakdown of Cash Impact

Cash impact of growth:	<u>Yr 2</u>
Cash impact of growth on gross margin p. 19	911
Cash impact of growth on SG&A p. 19	<u>(691)</u>
Cash impact of growth on operating cushion	<u>220</u>
Cash impact of growth on receivables p. 20	(379)
Cash impact of growth on inventory p. 20	(704)
Cash impact of growth on accounts payable p. 21	<u>243</u>
Cash impact of growth on operating working capital	<u>(840)</u>
Total cash impact of growth	<u>(620)</u>
Cash impact of changes in operating cushion and operating working capital days:	
Cash impact of change in gross margin p. 19	267
Cash impact of change in SG&A% p. 19	<u>(302)</u>
Cash impact of change in operating cushion	<u>(35)</u>
Cash impact of change in receivables days p. 20	(496)
Cash impact of change in inventory days p. 20	148
Cash impact of change in payables days p. 21	<u>(995)</u>
Cash impact of change in operating working capital days	<u>(1,343)</u>
Cash impact of change in operating cushion & working capital days	<u>(1,378)</u>

Core Operating Growth Profile

A Closer Look at the Profiles of Cash Generators and Cash Consumers As Revenues Grow

It is a generally accepted view that growth requires investments of cash. In this view, cash is needed for permanent investments in current assets such as receivables and inventory to support growth. As revenues grow, increasing amounts must be carried in receivables and inventory. Other such assets include prepaid expenses.

Providing cash to help finance these investments are vendor-related liabilities such as accounts payable and accrued expenses payable, and customer financing such as deferred revenue.

In actuality, some companies can grow at significant rates and still provide core operating cash flow as they grow. In fact, the faster they grow, the more positive core operating cash flow they generate.

At other companies, very modest growth may result in significant cash needs.

Knowing a company's profile – whether it is a cash generator or cash consumer with growth – is vital in understanding financial performance.

Core operating growth profile --

The capacity of a firm to generate core operating cash flow as it grows reflecting a combination of its operating cushion and operating working capital requirements, expressed as a percentage of revenue. It is measured as operating cushion % less operating working capital to revenue %. It is forward looking and reports the amount of core operating cash flow that can be expected for any measured amount of growth in revenue under the assumption that a firm's current mix of operating cushion and operating working capital remains unchanged. A firm with a positive operating growth profile® can grow operations and produce increasing amounts of core operating cash flow. A firm with a negative operating growth profile® will require other sources of cash to support revenue growth.

The operating cushion % reflects the contribution of a \$1 dollar increase in revenue to operating profit before non-cash expenses like depreciation. If working capital needs were non-existent, then the operating cushion % would be the core operating growth profile.

The higher the operating cushion %, the more cash a company will generate as it grows. Consuming that cash are increasing needs for receivables and inventory, less payables, as revenues grow.

Stated another way, the higher the operating cushion % and the lower the cash cycle, the more cash a company will generate (or the less it will consume) as it grows revenue.

In 2017, Industrial Services had an operating cushion % of 9.56% and a cash cycle of 133.14 days. During the ensuing 2018, under the burden of that profile of operating cushion % and cash cycle, the company consumed \$620 in core operating cash flow as it grew revenues by \$2,304 or 18%.

Developing the Core Operating Growth Profile

Instead of reporting the cash cycle in days, let us report it in terms of a percent of revenue.

That is, Receivables in days of 59.998 days becomes 16.44% (2,104 / 12,800), reflecting the % of every revenue dollar that is uncollected at year-end. Inventory in days of 111.583 days becomes 30.57% (3,913 / 12,800), reflecting the % of every revenue dollar must be carried in inventory. Payables in days of 38.440 becomes 10.53% (1,348 / 12,800), reflecting the % of every revenue dollar for which financing is provided by vendors.

As an aside, note that while a days statistic, such as A/R days, is measured as $A/R / (\text{revenue} / 365)$, in percent terms we are simply measuring $A/R / \text{revenue}$ and leaving out the 365 computation. The % approach still reflects the relative investment needed in A/R.

Armed with % terms, we can now measure Industrial Services' core operating growth profile in terms of revenue.

As of 2017 year end Industrial Services' Core operating growth profile was:

Gross margin% (excl. depn)	39.56%
SG&A% (excl. depn)	- <u>30.00%</u>
Operating cushion %	= <u>9.56%</u>
A/R to revenue %	- 16.44%
Inventory to revenue %	- 30.57%
A/P to revenue %	+ <u>10.53%</u>
Working capital %*	- <u>36.48%</u>
Core operating growth profile	- 26.92%

*Denotes % of 365 day year tied up in working capital.

Applying the Core Operating Growth Profile

For Industrial Services, a negative core operating growth profile of – 26.92% indicates that for every \$1 increase in revenue, the company will consume 26.92 cents in core operating cash flow.

During 2018, Industrial Services grew revenues by \$2,304.

$\$2,304 \times .2692$ equals a use of cash of \$620, which is the cash impact of growth shown in the Cash Drivers Report.

Analysts must be aware that if revenue growth is projected for the company, arrangements must be made to meet the projected cash needs.

Improvements in the Company's core operating growth profile will result in less onerous cash requirements of growth.

Comparing Growth Profiles
Cash Generators and Cash Consumers
Core Operating Growth Profile

Profile	Industrial Svcs	Home Depot	Dell	Microsoft
GM%	39.6%	_____	_____	_____
SG&A%	(30.0%)	_____	_____	_____
Op. Cushion%	= <u>9.6%</u>	_____	_____	_____
A/R%	(16.4%)	_____	_____	_____
Inventory%	(30.6%)	_____	_____	_____
A/P%	10.5%	_____	_____	_____
Prepays%	0.0%	_____	_____	_____
Accruals%	0.0%	_____	_____	_____
Deferred Revenue%	0.0%	_____	_____	_____
WC%	= (36.5%)	_____	_____	_____
Core Op. Profile%	(26.9%)	_____	_____	_____

Free Cash Growth Profile –

The capacity of a firm to generate sustainable free cash flow as it grows, reflecting a combination of its core operating growth profile, income taxes paid, capital expenditures and other investments needed to support operations, expressed as a percentage of revenue. It is measured as operating cushion % less operating working capital to revenue % less income taxes paid to revenue %, and less capital expenditures to revenue %, investment in operations-related intangibles to revenue %, and investment in other ops-related assets to revenue %. It is forward looking and reports the amount of sustainable free cash flow that can be expected for any measured amount of growth in revenue under the assumption that a firm's current mix of operating cushion, operating working capital, income taxes paid to revenue % and capital expenditures, investment in operations-related intangibles and investment in other ops-related assets to revenue % remain unchanged. A firm with a positive free cash growth profile® can grow operations and produce increasing amounts of sustainable free cash flow. A firm with a negative free cash growth profile® will require other sources of cash to support revenue growth.

The free cash growth profile extends the core operating growth profile metric to include taxes as a percent of revenue and capital expenditures as a percent of revenue.

The metric measures the change in free cash flow for every dollar increase in revenue.

For Industrial Services, we don't know the amount of income taxes paid or capital expenditures during 2017. Using 2018 figures as a percent of 2018 revenue as an approximation, we have:

Income taxes paid \$431 divided by revenue of \$15,104 = 2.9%

Capital expenditures \$0 or 0% of revenue.

The Free cash growth profile becomes:

Comparing Growth Profiles
Cash Generators and Cash Consumers
Free Cash Growth Profile

Profile	Industrial Svcs	Home Depot	Dell	Microsoft
Core Op. profile%	- 26.9%	_____	_____	_____
Tax%	- 2.9%	_____	_____	_____
Cap Exp%	0%	_____	_____	_____
Free cash%	- 29.8%	_____	_____	_____

Environmental Services, Inc.
Identifying Borrowing Causes

Selected financial statement data for Environmental Services, Inc. for the year ended March 31, 2018 are provided on the following pages. Also provided is a cash flow statement prepared in the Modified UCA format.

A quick review of the cash flow statement indicates that the company is experiencing an operating cash flow drain. Core operating cash flow is an outflow of \$7,176 and Operating cash flow is an outflow of \$8,402.

Required:

- 1) Where has the company obtained the cash needed to meet the requirements of a negative Core operating cash flow (\$7,176), interest paid (\$348), current portion (\$208), and capital expenditures (\$4,422)?
- 2) Why has Core operating cash flow turned negative in 2018? Identify if the reasons are growth-related or due to changes in the company's operating cushion and operating working capital. Use the Cash Impact Worksheet provided to help you in answering this question.
- 3) What is Environmental Services' Core Operating Growth Profile? Free Cash Growth Profile?

Note, analyzing Core operating cash flow (before taxes) does not analysis of the tax accounts.

Environmental Services, Inc.
Income Statement

Amounts in (000's)	2018	2017
Net Sales	\$ 142,209	\$ 64,451
Cost of sales	<u>126,134</u>	<u>54,779</u>
Gross profit	16,075	9,672
Selling, general and administrative expense	<u>10,208</u>	<u>5,935</u>
Income from operations	5,867	3,737
Other income (expense):		
Interest expense	(348)	(358)
Interest income	557	185
Other income	<u>129</u>	<u>36</u>
	<u>338</u>	<u>(137)</u>
Income before income taxes	6,205	3,600
Provision for income taxes	<u>2,241</u>	<u>1,367</u>
Net income	\$ <u><u>3,964</u></u>	\$ <u><u>2,233</u></u>

Environmental Services, Inc.
Balance Sheet

	2018	2017
Assets		
Current Assets:		
Cash and equivalents	\$ 3,669	\$ 2,748
Accounts receivable, net	20,625	6,707
Inventories	3,413	357
Prepaid expenses	<u>1,111</u>	<u>367</u>
Total current assets	28,818	10,179
Property and equipment, net	8,431	4,903
Investments	<u>2,841</u>	<u>1,186</u>
	\$ <u>40,090</u>	\$ <u>16,268</u>
Liabilities and Shareholders' Equity		
Current liabilities:		
Current maturities of long-term debt	\$ 321	\$ 208
Accounts payable	8,470	3,224
Accrued expenses	799	1,370
Income taxes payable	<u>99</u>	<u>142</u>
Total current liabilities	9,689	4,944
Long-term debt	9,552	3,079
Deferred income taxes	4	178
Shareholders' equity:		
Common stock	45	35
Additional paid-in capital	13,176	4,372
Retained earnings	<u>7,624</u>	<u>3,660</u>
Total shareholders' equity	<u>20,845</u>	<u>8,067</u>
	\$ <u>40,090</u>	\$ <u>16,268</u>

Environmental Services Cash Flow Statement
Year Ended March 31, 2018

Revenue	\$ 142,209	
Change in receivables	<u>(13,918)</u>	
Cash from revenue		\$ 128,291
Cost of revenue (excl. depn)	(126,134)	
Change in Inventory	(3,056)	
Change in A/P	<u>5,246</u>	
Cash cost of revenue		<u>(123,944)</u>
Cash gross margin		4,347
Cash Operating Expense		<u>(11,523)</u>
Core operating cash flow		<u>(7,176)</u>
Other recurring cash receipts		1,580
Total Tax Provision	(2,241)	
Inc (Dec) in Deferred Tax Liability	(174)	
Inc (Dec) in Income Taxes Payable	<u>(43)</u>	
Income Taxes Paid		<u>(2,458)</u>
Cash available for debt service		<u>(8,054)</u>
Interest paid		<u>(348)</u>
Operating cash flow		<u>(8,402)</u>
Capital Expenditures		<u>(4,422)</u>
Free cash flow		<u>(12,824)</u>
Investments		<u>(1,655)</u>
Change in cash and equivalents before financing		<u>(14,479)</u>
Required principal payments on LT debt		(208)
Dividends on common stock		
Short-term debt financing		
Long-term debt financing		6,794
Equity financing		8,814
Financing transactions		<u>15,400</u>
Change in cash and equivalents after financing		<u>\$ 921</u>

CASH IMPACT WORKSHEET

Name of Company: Environmental Services, Inc.

Summary of Key Statistics:

	Yr2:2018	Yr1: 2017	<u>Inc. (Dec.)</u>
Revenue	142,209	64,451	77,758
Revenue per Day	<hr/>	<hr/>	<hr/>
CGS (excl. depn)	126,134	54,779	71,355
Gross margin (excl. depn)	16,075	9,672	6,403
GM% (excl. depn)	<hr/>	<hr/>	<hr/>
SG&A expense (excl. depn)	10,208	5,935	4,273
SG&A% (excl. depn)	<hr/>	<hr/>	<hr/>
A/R	20,625	6,707	13,918
Days Receivables	<hr/>	<hr/>	<hr/>
Inventory	3,413	357	3,056
Days Inventory	<hr/>	<hr/>	<hr/>
A/P	8,470	3,224	5,246
Days Payables	<hr/>	<hr/>	<hr/>

CASH IMPACT WORKSHEET (Cont'd)

Name of Company: Environmental Services

Year2: 2018

<u>Key Ratios:</u>	<u>Formula:</u>	<u>Inflow (Outflow):</u>
Gross margin (GM%):		
Cash Impact of Growth	$\Delta\text{Rev}_{inc} \times \text{Yr 1 GM}\%$	_____
Cash Impact of $\Delta\text{GM}\%$	$\text{Yr2 Rev} \times \Delta\text{GM}\%_{inc}$	_____
Inc (Dec) Gross margin		6,403
SG&A Expense (SG&A%):		
Cash Impact of Growth	$(\Delta\text{Rev}_{inc}) \times \text{Yr1 SG\&A}\%$	_____
Cash Impact of $\Delta\text{SG\&A}\%$	$\text{Yr2 Rev} \times (\Delta\text{SG\&A}\%_{inc})$	_____
Dec (Inc) SG&A Expense		(4,273)
A/R (Days Receivables):		
Cash Impact of Growth	$(\Delta\text{Rev per Day}_{inc}) \times \text{Yr1 Days Rec}$	_____
Cash Impact of $\Delta\text{Days Rec}$	$\text{Yr2 Rev per Day} \times (\Delta\text{Days Rec}_{inc})$	_____
Dec (Inc) A/R		(13,918)
Inventory (Days Inventory):		
Cash Impact of Growth	$(\Delta\text{Rev per Day}_{inc}) \times \text{Yr1 Days Inv}$	_____
Cash Impact of $\Delta\text{Days Inv}$	$\text{Yr2 Rev per Day} \times (\Delta\text{Days Inv}_{inc})$	_____
Dec (Inc) Inventory		(3,056)
A/P (Days Payables):		
Cash Impact of Growth	$\Delta\text{Rev per Day}_{inc} \times \text{Yr1 Days Pay}$	_____
Cash Impact of $\Delta\text{Days Pay}$	$\text{Yr2 Rev per Day} \times \Delta\text{Days Pay}_{inc}$	_____
Inc (Dec) A/P		5,246

CASH DRIVERS REPORT

Critical Ratios:	<u>Yr 2 (2018)</u>	<u>Yr 1 (2017)</u>
Net Sales Growth %	_____	_____
Gross Margin % (excl. depn)	_____	_____
SG&A % (excl. depn)	_____	_____
Operating cushion (Gross - SG&A)% (excl. depn)	_____	_____
Receivables in Days	_____	_____
Inventory in Days	_____	_____
Payables in days	_____	_____
Cash cycle	_____	_____

Breakdown of Cash Impact

Cash impact of growth:	<u>Yr 2</u>
Cash impact of growth on gross margin	_____
Cash impact of growth on SG&A	_____
Cash impact of growth on operating cushion	_____
Cash impact of growth on receivables	_____
Cash impact of growth on inventory	_____
Cash impact of growth on accounts payable	_____
Cash impact of growth on operating working capital	_____
Total cash impact of growth	_____
Cash impact of changes in operating cushion and operating working capital days:	
Cash impact of change in gross margin	_____
Cash impact of change in SG&A%	_____
Cash impact of change in operating cushion	_____
Cash impact of change in receivables days	_____
Cash impact of change in inventory days	_____
Cash impact of change in payables days	_____
Cash impact of change in operating working capital days	_____
Cash impact of change in operating cushion & working capital days	_____

Calculating Cash Flow Profiles

Brown-Forman, Inc.

Required:

1. Calculate the company's core operating growth profile and free cash profile as of year-end 2015. Other income is not material and may be ignored.
2. What do these profiles imply about the company's ability to generate cash flow as it grows?
3. What are the implications for a change in free cash flow of a \$50 million increase in revenue?

BROWN-FORMAN CORPORATION
CONSOLIDATED STATEMENTS OF OPERATIONS
(Dollars in millions, except per share amounts)

<u>Year Ended April 30,</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
Net sales	\$ 3,784	\$ 3,946	\$ 4,096
Excise taxes	935	955	962
Cost of sales	894	913	951
Gross profit	1,955	2,078	2,183
Advertising expenses	408	436	437
Selling, general, and administrative expenses	650	686	697
Other expense (income), net	(1)	(15)	22
Operating income	898	971	1,027
Interest income	3	2	2
Interest expense	36	26	27
Income before income taxes	865	947	1,002
Income taxes	274	288	318
Net income	\$ 591	\$ 659	\$ 684

BROWN-FORMAN CORPORATION
CONSOLIDATED BALANCE SHEETS
(Dollars in millions)

<u>April 30,</u>	<u>2014</u>	<u>2015</u>
ASSETS		
Cash and cash equivalents	\$ 437	\$ 370
Accounts receivable, less allowance for doubtful accounts of \$9 in 2014 and \$10 in 2015	569	583
Inventories:		
Barreled whiskey	504	571
Finished goods	187	200
Work in process	144	121
Raw materials and supplies	47	61
Total inventories	882	953
Current deferred tax assets	33	16
Other current assets	256	332
Total current assets	2,177	2,254
Property, plant, and equipment, net	526	586
Goodwill	620	607
Other intangible assets	677	611
Deferred tax assets	18	18
Other assets	85	117
Total assets	\$ 4,103	\$ 4,193
LIABILITIES		
Accounts payable and accrued expenses	\$ 474	\$ 497
Accrued income taxes	71	12
Current deferred tax liabilities	8	9
Short-term borrowings	8	190
Current portion of long-term debt	—	250
Total current liabilities	561	958
Long-term debt, less unamortized discount of \$3 in 2014 and \$2 in 2015	997	748
Deferred tax liabilities	102	107
Accrued pension and other postretirement benefits	244	311
Other liabilities	167	164
Total liabilities	2,071	2,288
Commitments and contingencies		
STOCKHOLDERS' EQUITY		
Common stock:		
Class A, voting, \$0.15 par value (85,000,000 shares authorized; 85,000,000 shares issued)	13	13
Class B, nonvoting, \$0.15 par value (400,000,000 shares authorized; 142,313,000 shares issued)	21	21
Additional paid-in capital	81	99
Retained earnings	2,894	3,300
Accumulated other comprehensive income (loss), net of tax	(188)	(300)
Treasury stock, at cost (13,858,000 and 18,613,000 shares in 2014 and 2015, respectively)	(789)	(1,228)
Total stockholders' equity	2,032	1,905
Total liabilities and stockholders' equity	\$ 4,103	\$ 4,193

BROWN-FORMAN CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS
(Dollars in millions)

<u>Year Ended April 30,</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
Cash flows from operating activities:			
Net income	\$ 591	\$ 659	\$ 684
Adjustments to reconcile net income to net cash provided by operations:			
Depreciation and amortization	51	50	51
Stock-based compensation expense	11	13	15
Deferred income taxes	26	(5)	6
Other, net	2	1	9
Changes in assets and liabilities:			
Accounts receivable	(65)	(34)	(50)
Inventories	(105)	(67)	(102)
Other current assets	(22)	(43)	(30)
Accounts payable and accrued expenses	58	31	64
Accrued income taxes	17	60	(58)
Noncurrent assets and liabilities	(27)	(16)	19
Cash provided by operating activities	<u>537</u>	<u>649</u>	<u>608</u>
Cash flows from investing activities:			
Additions to property, plant, and equipment	(95)	(126)	(120)
Proceeds from sale of property, plant, and equipment	—	2	—
Acquisition of brand names and trademarks	(1)	(1)	(4)
Computer software expenditures	(1)	(2)	(1)
Cash used for investing activities	<u>(97)</u>	<u>(127)</u>	<u>(125)</u>
Cash flows from financing activities:			
Net change in short-term borrowings	(1)	5	183
Repayment of long-term debt	(253)	(2)	—
Proceeds from long-term debt	747	—	—
Debt issuance costs	(7)	—	—
Net payments related to exercise of stock-based awards	(16)	(19)	(14)
Excess tax benefits from stock-based awards	17	10	18
Acquisition of treasury stock	—	(49)	(462)
Dividends paid	(1,063)	(233)	(256)
Cash used for financing activities	<u>(576)</u>	<u>(288)</u>	<u>(531)</u>
Effect of exchange rate changes on cash and cash equivalents	2	(1)	(19)
Net increase (decrease) in cash and cash equivalents	<u>(134)</u>	<u>233</u>	<u>(67)</u>
Cash and cash equivalents, beginning of period	338	204	437
Cash and cash equivalents, end of period	<u>\$ 204</u>	<u>\$ 437</u>	<u>\$ 370</u>
Supplemental disclosure of cash paid for:			
Interest	\$ 32	\$ 28	\$ 27
Income taxes	\$ 252	\$ 281	\$ 375

Calculating Cash Flow Profiles

Apple, Inc.

Required:

1. Calculate the company's core operating growth profile and free cash profile as of year-end 2017. Exclude other income, other non-current assets and other non-current liabilities from your calculations.
2. What do these profiles imply about the company's ability to generate cash flow as it grows?
3. What are the implications for free cash flow of a \$20 billion increase in revenue?

Apple Inc.
CONSOLIDATED STATEMENTS OF OPERATIONS
(In millions)

	Years ended		
	September 30, 2017	September 24, 2016	September 26, 2015
Net sales	\$ 229,234	\$ 215,639	\$ 233,715
Cost of sales	141,048	131,376	140,089
Gross margin	88,186	84,263	93,626
Operating expenses:			
Research and development	11,581	10,045	8,067
Selling, general and administrative	15,261	14,194	14,329
Total operating expenses	26,842	24,239	22,396
Operating income	61,344	60,024	71,230
Other income/(expense), net	2,745	1,348	1,285
Income before provision for income taxes	64,089	61,372	72,515
Provision for income taxes	15,738	15,685	19,121
Net income	\$ 48,351	\$ 45,687	\$ 53,394

Apple Inc.

CONSOLIDATED BALANCE SHEETS

	September 30, 2017	September 24, 2016
ASSETS (in millions):		
Current assets:		
Cash and cash equivalents	\$ 20,289	\$ 20,484
Short-term marketable securities	53,892	46,671
Accounts receivable, less allowances of \$58 and \$53, respectively	17,874	15,754
Inventories	4,855	2,132
Vendor non-trade receivables	17,799	13,545
Other current assets	13,936	8,283
Total current assets	128,645	106,869
Long-term marketable securities	194,714	170,430
Property, plant and equipment, net	33,783	27,010
Goodwill	5,717	5,414
Acquired intangible assets, net	2,298	3,206
Other non-current assets	10,162	8,757
Total assets	\$ 375,319	\$ 321,686
LIABILITIES AND SHAREHOLDERS' EQUITY:		
Current liabilities:		
Accounts payable	\$ 49,049	\$ 37,294
Accrued expenses	25,744	22,027
Deferred revenue	7,548	8,080
Commercial paper	11,977	8,105
Current portion of long-term debt	6,496	3,500
Total current liabilities	100,814	79,006
Deferred revenue, non-current	2,836	2,930
Long-term debt	97,207	75,427
Other non-current liabilities	40,415	36,074
Total liabilities	241,272	193,437
Commitments and contingencies		
Shareholders' equity:		
Common stock and additional paid-in capital, \$0.00001 par value: 12,600,000 shares authorized; 5,126,201 and 5,336,166 shares issued and outstanding, respectively	35,867	31,251
Retained earnings	98,330	96,364
Accumulated other comprehensive income/(loss)	(150)	634
Total shareholders' equity	134,047	128,249
Total liabilities and shareholders' equity	\$ 375,319	\$ 321,686

Apple, Inc. CONSOLIDATED STATEMENTS OF CASH FLOWS (in millions)

	September 30, 2017	September 24, 2016	September 26, 2015
Cash and cash equivalents, beginning of the year	\$ 20,484	\$ 21,120	\$ 13,844
Operating activities:			
Net income	48,351	45,687	53,394
Adjustments to reconcile net income to cash generated by operating activities:			
Depreciation and amortization	10,157	10,505	11,257
Share-based compensation expense	4,840	4,210	3,586
Deferred income tax expense	5,966	4,938	1,382
Other	(166)	486	385
Changes in operating assets and liabilities:			
Accounts receivable, net	(2,093)	527	417
Inventories	(2,723)	217	(238)
Vendor non-trade receivables	(4,254)	(51)	(3,735)
Other current and non-current assets	(5,318)	1,055	(283)
Accounts payable	9,618	1,837	5,001
Deferred revenue	(626)	(1,554)	1,042
Other current and non-current liabilities	(154)	(2,033)	9,058
Cash generated by operating activities	63,598	65,824	81,266
Investing activities:			
Purchases of marketable securities	(159,486)	(142,428)	(166,402)
Proceeds from maturities of marketable securities	31,775	21,258	14,538
Proceeds from sales of marketable securities	94,564	90,536	107,447
Payments made in connection with business acquisitions, net	(329)	(297)	(343)
Payments for acquisition of property, plant and equipment	(12,451)	(12,734)	(11,247)
Payments for acquisition of intangible assets	(344)	(814)	(241)
Payments for strategic investments, net	(395)	(1,388)	—
Other	220	(110)	(26)
Cash used in investing activities	(46,446)	(45,977)	(56,274)
Financing activities:			
Proceeds from issuance of common stock	555	495	543
Excess tax benefits from equity awards	627	407	749
Payments for taxes related to net share settlement of equity awards	(1,874)	(1,570)	(1,499)
Payments for dividends and dividend equivalents	(12,769)	(12,150)	(11,561)
Repurchases of common stock	(32,900)	(29,722)	(35,253)
Proceeds from issuance of term debt, net	28,662	24,954	27,114
Repayments of term debt	(3,500)	(2,500)	—
Change in commercial paper, net	3,852	(397)	2,191
Cash used in financing activities	(17,347)	(20,483)	(17,716)
Increase/(Decrease) in cash and cash equivalents	(195)	(636)	7,276
Cash and cash equivalents, end of the year	\$ 20,289	\$ 20,484	\$ 21,120
Supplemental cash flow disclosure:			
Cash paid for income taxes, net	\$ 11,591	\$ 10,444	\$ 13,252
Cash paid for interest	\$ 2,092	\$ 1,316	\$ 514

Solution Note:
 Comparing Growth Profiles
 Cash Generators and Cash Consumers
 Core Operating Growth Profile

Profile	Industrial Svcs	Home Depot	Dell	Microsoft
GM%	39.6%	34.6%	21.4%	74.0%
SG&A%	<u>(30.0%)</u>	<u>(24.2%)</u>	<u>(14.1%)</u>	<u>(34.8%)</u>
Op. Cushion%	= <u>9.6%</u>	= <u>10.4%</u>	= <u>7.3%</u>	= <u>39.2%</u>
A/R%	(16.4%)	(1.9%)	(11.6%)	(22.5%)
Inventory%	(30.6%)	(14.3%)	(2.4%)	(2.5%)
A/P%	10.5%	7.2%	20.3%	6.2%
Prepays%	0.0%	(1.0%)	(7.0%)	(4.4%)
Accruals%	0.0%	4.7%	6.4%	10.7%
Def. Revenue%	<u>0.0%</u>	<u>1.7%</u>	<u>14.7%</u>	<u>28.8%</u>
WC%	= <u>(36.5%)</u>	= <u>(3.6%)</u>	= <u>20.4%</u>	= <u>16.3%</u>
Core Op. Profile%	(26.9%)	6.8%	27.7%	55.5%

() = Use of Cash

Solution Note
 Comparing Growth Profiles
 Cash Generators and Cash Consumers
 Free Cash Growth Profile

Profile	Industrial Svcs	Home Depot	Dell	Microsoft
Core Op. profile%	(26.9%)	6.8%	27.7%	55.5%
Tax%	(2.9%)	(3.3%)	(.5%)	(5.0%)
Cap Exp%	<u>0%</u>	<u>(1.8%)</u>	<u>(.9%)</u>	<u>(5.5%)</u>
Free cash%	(29.8%)	1.7%	26.3%	45.0%

SOLUTION NOTE
Environmental Services

Required:

1) Where has the company obtained the cash needed to meet the requirements of a negative Core operating cash flow (\$7,176), interest paid (\$348), current portion (\$208), and capital expenditures (\$4,422)?

Long-term debt and equity financing.

What is unclear without analyzing the sources of the operating cash flow drain is whether the outflow for operations is due to growth or to declining trends in the company's profitability or efficiency.

2) Why has Core operating cash flow turned negative in 2014? Identify if the reasons are growth-related or due to changes in the company's operating cushion and operating working capital. Use the Cash Impact Worksheet provided to help you in answering this question. See the worksheet for details.

Though the company enjoyed significant growth, growth consumed very little core operating cash flow, about \$129. The company's profile of operating cushion and low working capital needs is why.

The worsening of the company's profile, including its operating cushion and operating working capital profile consumed significant amounts of cash in 2014, totaling \$9,469.

3) Core Operating Growth Profile:

Profile	Environ Svcs
GM%	15.0%
SG&A%	<u>(9.2%)</u>
Op. Cushion%	= <u>5.8%</u>
A/R%	(10.4%)
Inventory%	(.5%)
A/P%	<u>5.0%</u>
WC%	= <u>(5.9%)</u>
Core Op. Profile%	(.1%)

CASH IMPACT WORKSHEET

Name of Company: Environmental Services, Inc.

Summary of Key Statistics:

	Yr2:2018	Yr1: 2017	<u>Inc. (Dec.)</u>
Revenue	142,209	64,451	77,758
Revenue per Day	389.614	176.578	213.036
CGS (excl. depn)	126,134	54,779	71,355
Gross margin (excl. depn)	16,075	9,672	6,403
GM% (excl. depn)	.113	.15	(.037)
SG&A expense (excl. depn)	10,208	5,935	4,273
SG&A% (excl. depn)	.072	.092	(.020)
A/R	20,625	6,707	13,918
Days Receivables	52.937	37.983	14.954
Inventory	3,413	357	3,056
Days Inventory	8.760	2.022	6.738
A/P	8,470	3,224	5,246
Days Payables	21.739	18.258	3.481

CASH IMPACT WORKSHEET (Cont'd)

Name of Company: Environmental Services		Year2: 2018
<u>Key Ratios:</u>	<u>Formula:</u>	<u>Inflow (Outflow):</u>
Gross margin (GM%):		
Cash Impact of Growth	$\Delta\text{Rev}_{inc} \times \text{Yr 1 GM}\%$	11,664
Cash Impact of $\Delta\text{GM}\%$	$\text{Yr2 Rev} \times \Delta\text{GM}\%_{inc}$	<u>(5,261)</u>
Inc (Dec) Gross margin		6,403
SG&A Expense (SG&A%):		
Cash Impact of Growth	$(\Delta\text{Rev}_{inc}) \times \text{Yr1 SG\&A}\%$	(7,160)
Cash Impact of $\Delta\text{SG\&A}\%$	$\text{Yr2 Rev} \times (\Delta\text{SG\&A}\%_{inc})$	<u>2,887</u>
Dec (Inc) SG&A Expense		(4,273)
A/R (Days Receivables):		
Cash Impact of Growth	$(\Delta\text{Rev per Day}_{inc}) \times \text{Yr1 Days Rec}$	(8,092)
Cash Impact of $\Delta\text{Days Rec}$	$\text{Yr2 Rev per Day} \times (\Delta\text{Days Rec}_{inc})$	<u>(5,826)</u>
Dec (Inc) A/R		(13,918)
Inventory (Days Inventory):		
Cash Impact of Growth	$(\Delta\text{Rev per Day}_{inc}) \times \text{Yr1 Days Inv}$	(431)
Cash Impact of $\Delta\text{Days Inv}$	$\text{Yr2 Rev per Day} \times (\Delta\text{Days Inv}_{inc})$	<u>(2,625)</u>
Dec (Inc) Inventory		(3,056)
A/P (Days Payables):		
Cash Impact of Growth	$\Delta\text{Rev per Day}_{inc} \times \text{Yr1 Days Pay}$	3,890
Cash Impact of $\Delta\text{Days Pay}$	$\text{Yr2 Rev per Day} \times \Delta\text{Days Pay}_{inc}$	<u>1,356</u>
Inc (Dec) A/P		5,246

CASH DRIVERS REPORT

Critical Ratios:	<u>Yr 2 (2018)</u>	<u>Yr 1 (2017)</u>
Net Sales Growth %	121%	
Gross Margin % (excl. depn)	11.3%	15%
SG&A % (excl. depn)	<u>7.2%</u>	<u>9.2%</u>
Operating cushion (Gross - SG&A)% (excl. depn)	4.1%	5.8%
Receivables in Days	53	38
Inventory in Days	10	2
Payables in Days	<u>25</u>	<u>21</u>
Cash Cycle	38	19

Breakdown of Cash Impact

Cash impact of growth:	<u>Yr 2 (2018)</u>
Cash impact of growth on gross margin	11,664
Cash impact of growth on SG&A	<u>(7,160)</u>
Cash impact of growth on operating cushion	4,504
Cash impact of growth on receivables	(8,092)
Cash impact of growth on inventory	(431)
Cash impact of growth on accounts payable	3,890
Cash impact of growth on operating working capital	<u>(4,633)</u>
Total cash impact of growth	(129)
Cash impact of changes in operating cushion and operating working capital days:	
Cash impact of change in gross margin	(5,261)
Cash impact of change in SG&A%	<u>2,887</u>
Cash impact of change in operating cushion	(2,374)
Cash impact of change in receivables days	(5,826)
Cash impact of change in inventory days	(2,625)
Cash impact of change in payables days	1,356
Cash impact of change in operating working capital days	<u>(7,095)</u>
Cash impact of change in operating cushion & working capital days	(9,469)