2-30 (a)

	Alligators		Dolphins		Total
Units sold	140,000		60,000		200,000
Sales mix percentage*	.7		.3		
		Weighted average**		Weighted average**	Sum of weighted averages
Sales price per unit	$20.00	$14.00	$25.00	$7.50	$21.50
Variable costs per unit	$ 8.00	$ 5.60	$10.00	$3.00	$ 8.60
Unit CM	$12.00	$ 8.40	$15.00	$4.50	$12.90

* 140,000/(140,000 + 60,000) = .7; 60,000/(140,000 + 60,000) = .3

** $20 × .7 = $14; $8 × .7 = $5.60; $25 × .3 = $7.50; $10 × .3 = $3

Breakeven units = $1,290,000/$12.90 = 100,000 units. Of these, 100,000 × .7 = 70,000 will be alligators and 100,000 × .3 = 30,000 will be dolphins.

(b)

	Alligators		Dolphins		Total
Units sold	60,000		140,000		200,000
Sales mix percentage*	.3		.7		
		Weighted average**		Weighted average**	Sum of weighted averages
Sales price per unit	$20.00	$6.00	$25.00	$17.50	$23.50
Variable costs per unit	$ 8.00	$2.40	$10.00	$ 7.00	$ 9.40
Unit CM	$12.00	$3.60	$15.00	$10.50	$14.10

* 60,000/(140,000 + 60,000) = .3; 140,000/(140,000 + 60,000) = .7

** $20 × .3 = $6; $8 × .3 = $2.40; $25 × .7 = $17.50; $10 × .7 = $7

Breakeven units = $1,290,000/$14.10 = 91,489.36, which we round up to 91,490 units. Of these, 91,490 × .3 = 27,447 will be alligators and 91,490 × .7 = 64,043 will be dolphins.

(c) In part (b), the sales mix percentage for the higher-CM product (dolphins) is greater than in part (a). Consequently, fewer total units are required to break even (91,490 in part (b) versus 100,000 in part (a)).

5-35

	Year 1	Year 2	Year 3	Year 4	Year 5
Cash inflow:					
Sale of old machine	$40,000				(5,000)
Saving because old machine not repaired	20,000				
Salvage value of new machine					$10,000
Decrease in annual operating costs	20,000	$20,000	$20,000	$20,000	$20,000
Cash outflow:					
Purchase of new machines	(120,000)	0	0	0	0
Net cash inflow (outflow)	($40,000)	$20,000	$20,000	$20,000	$25,000
Cumulative cash inflow (outflow)	($40,000)	($20,000)	$0	$20,000	$45,000

Joyce Printers should replace the machines if they expect to use the new machines for more than four years.