59 Event-full

At Lowell High School, the cost to attend special events depends on whether or not a student has purchased a $10 discount card.

  Option A: The student buys a discount card. The cost is $5 per event.

  Option B: The student does not buy a discount card. The cost is $7.50 per event.

Graph the relationship between total cost and number of events for each option on the grid.

Total Cost vs. Number of Events

OPTION B ⟶ $C = 7.5n$

OPTION A ⟶ $C = 5n + 10$

# of events	cost
0	$0 \times 7.50 = 0$
2	$2 \times 7.50 = 15$
4	$4 \times 7.50 = 30$
6	$6 \times 7.50 = 45$
8	$8 \times 7.50 = 60$
10	$9 \times 7.50 = 75$

Total cost ($) vs *Number of events*
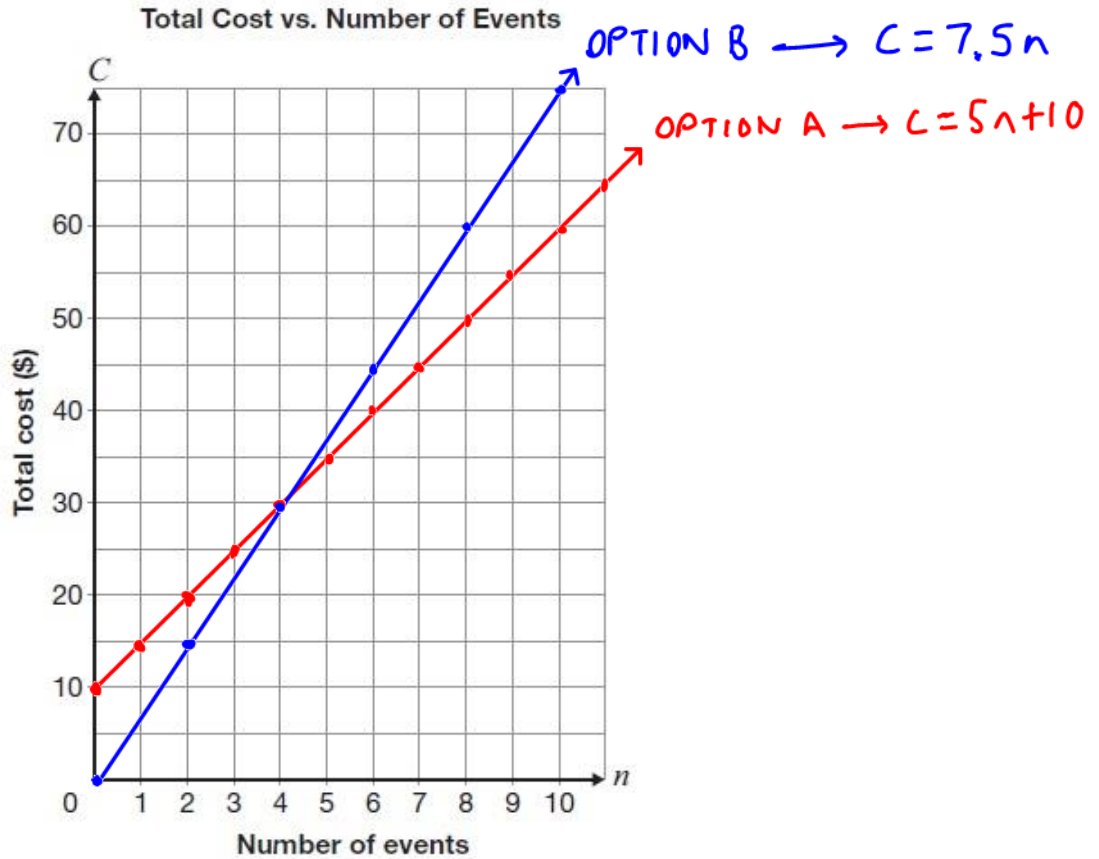
Determine the conditions under which a student at Lowell High School should choose each option.
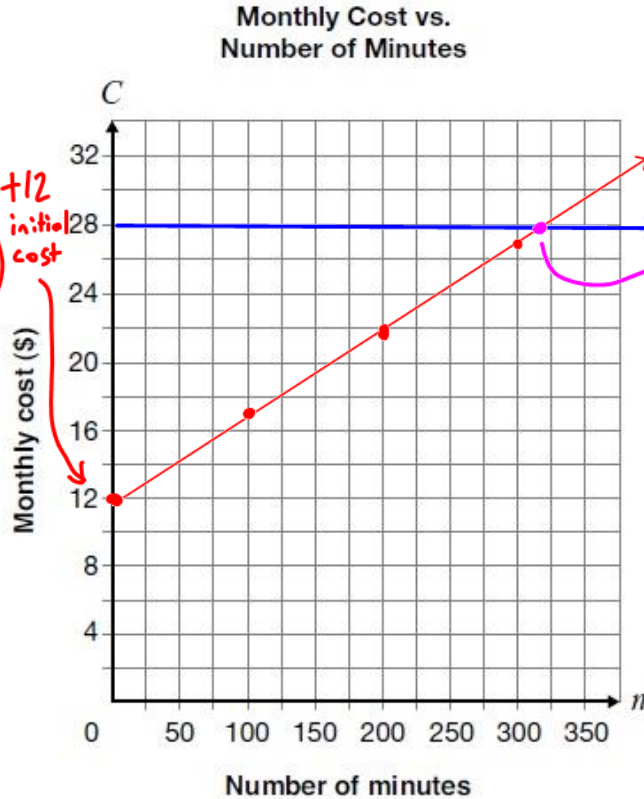
Justify your answer.

1. more than 4 events, buy a student card

2. less than 4 events, do not need a student card

3. exactly 4 events, either option

60 ## Cellphone Plans

Serge is choosing a cellphone plan and wants the lowest cost. Cell-a-Bration charges $12 per month plus $0.05 per minute for cellphone service. E-Phone charges $28 per month for unlimited minutes.

minutes	cost
1	0.05
100	$100 \times 0.05 = 5$
200	$200 \times 0.05 = 10$
300	$300 \times 0.05 = 15$

$+12$ initial cost

$C = 12 + 0.05x$ (cell-a-braiton)

$C = 28$ (E-phone)

Break-even point

Monthly Cost vs. Number of Minutes

Monthly cost ($) vs Number of minutes

Determine under which conditions Serge should choose Cell-a-Bration and under which conditions Serge should choose E-Phone. Hint: calculate the break-even point algebraically and you should have 3 different conditions:
1. more than the break-even point
2. less than the break-even point
3. exactly at the break-even point

Justify your answer.

$C = 12 + 0.05x$ $C = 28$

equate

$12 + 0.05x = 28$

$0.05x = 28 - 12$

$0.05x = 16$

$\dfrac{0.05x}{0.05} = \dfrac{16}{0.05}$

$x = 320$ minutes

∴ If Serge uses more than 320 minutes, he should choose E-phone

∴ If serge uses less than 320 minutes, he should choose cell-a-bration

∴ If serge uses exactly 320 minutes, than he can choose either plan

76 ## To Colour or Not to Colour

The graph below shows the cost to print a document at the Graphics Shop. Line A
represents the cost of printing the document in colour. Line B represents the cost to print it
with black ink only.

Cost vs. Number of Pages
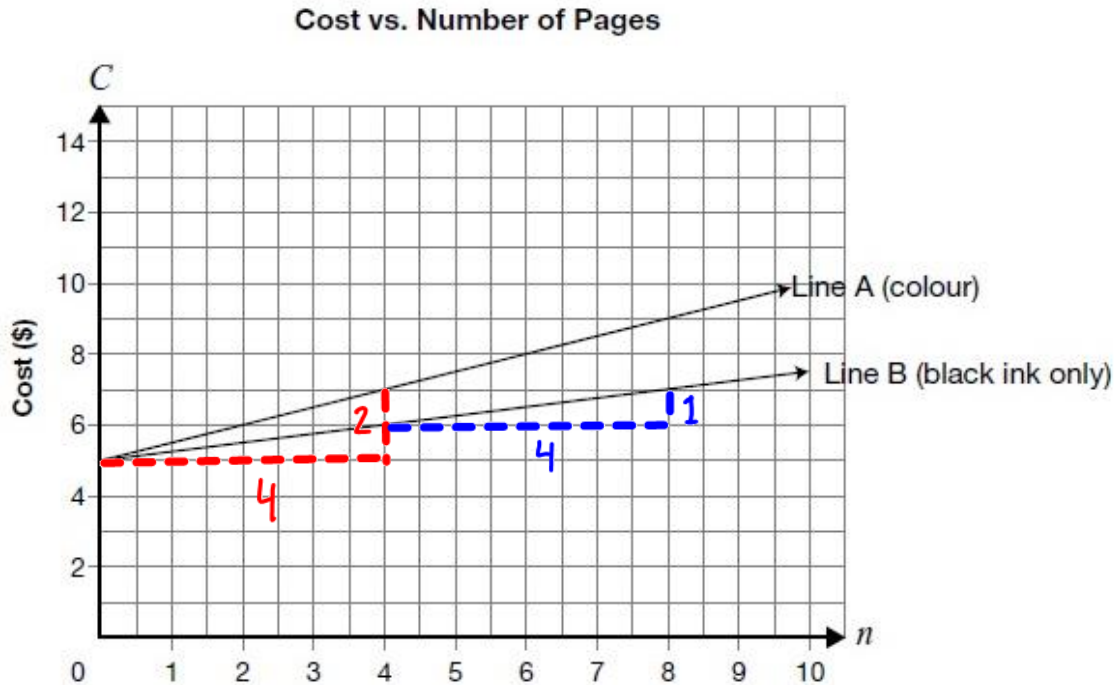
$p=500$ Number of pages

For a 500-page document, how much more will it cost to print in colour than with black ink
only?

Show your work.

Colour

$m = \dfrac{rise}{run} = \dfrac{2}{4} = 0.5$

$C_{colour} = 5 + 0.5p$
$= 5 + 0.5(500)$
$= 5 + 250$
$= \$255$

$\$255$
$- \$130$
_____
$\$125$

Black

$m = \dfrac{rise}{run} = \dfrac{1}{4} = 0.25$

$C_{black} = 5 + 0.25p$
$= 5 + 0.25(500)$
$= 5 + 125$
$= \$130$

∴ It costs $125 more to print in colour than in black ink

12 The Better Choice

Shane has a choice between two jobs helping people around his neighbourhood.

• **Job A:** Shane's total pay is shown on the grid below.

• **Job B:** Shane will receive base pay of $30, plus $12.50 per hour. $y = 12.50x + 30$

Determine the conditions under which Shane should select Job A and the conditions under which he should select Job B.

Justify your answer.

#hours	$pay
4	$4 \times 12.50 = 50 + 30 = 80$
8	$8 \times 12.50 = 100 + 30 = 130$

1. if shane works 1-4 hours, he should pick Job B (more pay)

2. if shane work 4 hours or more, he should pick Job A (more pay)

3. if he works exactly 4 hours, he can choose either job

Total Pay vs. Number of Hours Worked

P

Job A

Job B

Total pay ($)

Number of hours worked