

You have been working for home-building companies for a number of years. You enjoy construction work, and now you want to start your own home-building company that you will run yourself.

You quit your previous job that had been paying \$40,000 per year. You have \$40,000 in your savings account that you withdraw to start this company. The savings account had been paying you 5% interest. Because the \$40,000 from your savings is not enough to start the company, you also borrow \$2,300,000 from the bank. (The bank manager is willing to loan you such a large amount because he knows of your reputation and experience in the home-building industry.) You use the money to hire workers and buy the tools, machinery, and raw materials with which you will build houses.

The cost per worker is \$20,000 per year. In your first year, you plan to hire 48 workers to do the construction work, which means that the annual labor cost of your company will be \$960,000 ($48 \times \$20,000$). With 48 workers, your company can build seven houses.

You must also buy raw materials--land, wood, nails, plasterboard, and so forth. Each house requires \$20,000 worth of raw materials. The cost of raw materials for seven houses is \$140,000 ($7 \times \$20,000$).

Finally, the bank charges 6% interest on your loan. The interest cost is \$138,000 (6% of \$2,300,000).

1.1. Based on this scenario, what are the total explicit costs for your construction company?

- ☐ A. \$1,238,000
- ☐ B. \$960,000
- ☐ C. \$1,280,000
- ☐ D. \$2,300,000
- ☐ E. \$42,000

You have been working for home-building companies for a number of years. You enjoy construction work, and now you want to start your own home-building company that you will run yourself.

You quit your previous job that had been paying \$40,000 per year. You have \$40,000 in your savings account that you withdraw to start this company. The savings account had been paying you 5% interest. Because the \$40,000 from your savings is not enough to start the company, you also borrow \$2,300,000 from the bank. (The bank manager is willing to loan you such a large amount because he knows of your reputation and experience in the home-building industry.) You use the money to hire workers and buy the tools, machinery, and raw materials with which you will build houses.

The cost per worker is \$20,000 per year. In your first year, you plan to hire 48 workers to do the construction work, which means that the annual labor cost of your company will be \$960,000 ($48 \times \$20,000$). With 48 workers, your company can build seven houses.

You must also buy raw materials--land, wood, nails, plasterboard, and so forth. Each house requires \$20,000 worth of raw materials. The cost of raw materials for seven houses is \$140,000 ($7 \times \$20,000$).

Finally, the bank charges 6% interest on your loan. The interest cost is \$138,000 (6% of \$2,300,000).

1.2. What are the total implicit costs for your construction company?

- ☐ A. \$80,000
- ☐ B. \$1,280,000
- ☐ C. \$40,000
- ☐ D. \$42,000
- ☐ E. \$1,238,000

You have been working for home-building companies for a number of years. You enjoy construction work, and now you want to start your own home-building company that you will run yourself.

You quit your previous job that had been paying \$40,000 per year. You have \$40,000 in your savings account that you withdraw to start this company. The savings account had been paying you 5% interest. Because the \$40,000 from your savings is not enough to start the company, you also borrow \$2,300,000 from the bank. (The bank manager is willing to loan you such a large amount because he knows of your reputation and experience in the home-building industry.) You use the money to hire workers and buy the tools, machinery, and raw materials with which you will build houses.

The cost per worker is \$20,000 per year. In your first year, you plan to hire 48 workers to do the construction work, which means that the annual labor cost of your company will be \$960,000 ($48 \times \$20,000$). With 48 workers, your company can build seven houses.

You must also buy raw materials--land, wood, nails, plasterboard, and so forth. Each house requires \$20,000 worth of raw materials. The cost of raw materials for seven houses is \$140,000 ($7 \times \$20,000$).

Finally, the bank charges 6% interest on your loan. The interest cost is \$138,000 (6% of \$2,300,000).

1.3. You sell seven homes during the year at a price of \$200,000 per home. Therefore, your company receives total revenue of \$1,400,000 ($7 \times \$200,000$). What are the economic profits for your construction company?

- ☐ A. \$0
- ☐ B. \$120,000
- ☐ C. \$162,000
- ☐ D. \$1,400,000
- ☐ E. \$1,358,000

You have been working for home-building companies for a number of years. You enjoy construction work, and now you want to start your own home-building company that you will run yourself.

You quit your previous job that had been paying \$40,000 per year. You have \$40,000 in your savings account that you withdraw to start this company. The savings account had been paying you 5% interest. Because the \$40,000 from your savings is not enough to start the company, you also borrow \$2,300,000 from the bank. (The bank manager is willing to loan you such a large amount because he knows of your reputation and experience in the home-building industry.) You use the money to hire workers and buy the tools, machinery, and raw materials with which you will build houses.

The cost per worker is \$20,000 per year. In your first year, you plan to hire 48 workers to do the construction work, which means that the annual labor cost of your company will be \$960,000 ($48 \times \$20,000$). With 48 workers, your company can build seven houses.

You must also buy raw materials--land, wood, nails, plasterboard, and so forth. Each house requires \$20,000 worth of raw materials. The cost of raw materials for seven houses is \$140,000 ($7 \times \$20,000$).

Finally, the bank charges 6% interest on your loan. The interest cost is \$138,000 (6% of \$2,300,000).

1.4. When you sell seven homes during the year, what are the total variable costs for your construction company?

- ☐ A. \$2,300,000
- ☐ B. \$140,000
- ☐ C. \$40,000
- ☐ D. \$1,100,000
- ☐ E. \$960,000

You have been working for home-building companies for a number of years. You enjoy construction work, and now you want to start your own home-building company that you will run yourself.

You quit your previous job that had been paying \$40,000 per year. You have \$40,000 in your savings account that you withdraw to start this company. The savings account had been paying you 5% interest. Because the \$40,000 from your savings is not enough to start the company, you also borrow \$2,300,000 from the bank. (The bank manager is willing to loan you such a large amount because he knows of your reputation and experience in the home-building industry.) You use the money to hire workers and buy the tools, machinery, and raw materials with which you will build houses.

The cost per worker is \$20,000 per year. In your first year, you plan to hire 48 workers to do the construction work, which means that the annual labor cost of your company will be \$960,000 ($48 \times \$20,000$). With 48 workers, your company can build seven houses.

You must also buy raw materials--land, wood, nails, plasterboard, and so forth. Each house requires \$20,000 worth of raw materials. The cost of raw materials for seven houses is \$140,000 ($7 \times \$20,000$).

Finally, the bank charges 6% interest on your loan. The interest cost is \$138,000 (6% of \$2,300,000).

1.5. What are the total fixed costs for your construction company?

- ☐ A. \$140,000
- ☐ B. \$180,000
- ☐ C. \$960,000
- ☐ D. \$1,280,000
- ☐ E. \$42,000

Here is a production function for your construction company, showing the relationship between the number of workers employed and the number of homes built in a year. No matter how many workers are hired, each is paid \$20,000 per year.

Number of Workers	Number of Homes
0	0
7	1
13	2
18	3
24	4
31	5
39	6
48	7
58	8
69	9
81	10

2.1. For which of the following workers are there diminishing marginal returns to labor? (Hint: Calculate the marginal product by dividing the change in the number of houses built by the change in the number of workers.)

- ☐ **A.** Workers 1 through 18
- ☐ **B.** Workers 24 through 81
- ☐ **C.** Workers 0 through 81
- ☐ **D.** Workers 1 through 81
- ☐ **E.** Workers 7 through 48

Here is a production function for your construction company, showing the relationship between the number of workers employed and the number of homes built in a year. No matter how many workers are hired, each is paid \$20,000 per year.

Number of Workers	Number of Homes
0	0
7	1
13	2
18	3
24	4
31	5
39	6
48	7
58	8
69	9
81	10

2.2. When the marginal product is falling (that is, when there are diminishing marginal returns to labor), the marginal cost of each home must be:

- ☐ **A.** Remaining unchanged
- ☐ **B.** Rising
- ☐ **C.** Falling

Previously, you were given this production function for your company. Recall that each worker is paid \$20,000 per year by your company. In addition to labor costs, each home requires \$20,000 worth of raw materials.

Number of Workers	Number of Homes
0	0
7	1
13	2
18	3
24	4
31	5
39	6
48	7
58	8
69	9
81	10

3.1. What is the cost of the labor needed to build the first home?

\$

Please enter a whole number, with no decimal point.

Previously, you were given this production function for your company. Recall that each worker is paid \$20,000 per year by your company. In addition to labor costs, each home requires \$20,000 worth of raw materials.

Number of Workers	Number of Homes
0	0
7	1
13	2
18	3
24	4
31	5
39	6
48	7
58	8
69	9
81	10

3.2. What is the cost of the raw materials required to build six houses?

\$ _____

Please enter a whole number, with no decimal point.

Previously, you were given this production function for your company. Recall that each worker is paid \$20,000 per year by your company. In addition to labor costs, each home requires \$20,000 worth of raw materials.

Number of Workers	Number of Homes
0	0
7	1
13	2
18	3
24	4
31	5
39	6
48	7
58	8
69	9
81	10

3.3. What is the marginal cost of building an eighth home?

\$

Please enter a whole number, with no decimal point.

The following table provides limited information about your costs.

Quantity	Raw Materials Cost	Labor	Total Variable Cost	Average Variable Cost
1	?	?	?	?
2	\$40,000	\$260,000	\$300,000	?
3	60,000	360,000	420,000	?
4	80,000	480,000	560,000	?
5	100,000	620,000	720,000	?
6	?	?	?	?
7	?	?	?	?
8	?	?	?	?
9	180,000	1,380,000	1,560,000	?
10	?	?	?	?

4.1. What is the average variable cost if you build three houses? (If you get a decimal, round to the nearest dollar.)

\$

Please enter a whole number, with no decimal point.

The following table provides limited information about your costs.

Quantity	Raw Materials Cost	Labor	Total Variable Cost	Average Variable Cost
1	?	?	?	?
2	\$40,000	\$260,000	\$300,000	?
3	60,000	360,000	420,000	?
4	80,000	480,000	560,000	?
5	100,000	620,000	720,000	?
6	?	?	?	?
7	?	?	?	?
8	?	?	?	?
9	180,000	1,380,000	1,560,000	?
10	?	?	?	?

- 4.2. What is the average variable cost if you build nine homes? (If you get a decimal, round to the nearest dollar.)

.....
\$

Please enter a whole number, with no decimal point.

Earlier in this problem set, you found that total fixed cost for your construction company was \$180,000.

5.1. If you build only one home, what is your average fixed cost?

\$

Please enter a whole number, with no decimal point.

Earlier in this problem set, you found that total fixed cost for your construction company was \$180,000.

5.2. If you build nine homes, what is your average fixed cost?

\$

Please enter a whole number, with no decimal point.