## Lesson 17: Annually, Quarterly, or Monthly?

* Let’s use different time intervals to solve problems.

### 17.1: Finding Equal Expressions

1. Find pairs of expressions that are equal. Be prepared to explain how you know.
2. Write an expression that is equal to using a single exponent.
3. Without evaluating the expressions, explain why is equal to .

### 17.2: How Many Times Per Year?

1. Complete the table.

| * If something happens...
 | * It happens this many times a year...
 | * It happens every  months...
 |
| --- | --- | --- |
| * annually
 | *
 | *
 |
| * semi-annually
 | *
 | *
 |
| * quarterly
 | *
 | *
 |
| * monthly
 | *
 | *
 |

1. A gym membership has an annual fee, billed monthly. How much is each bill, if the annual fee in dollars is . . .?
	1. 360
	2. 540
2. An educational foundation gives an annual scholarship, distributed semi-annually. How much is each distribution, if the annual scholarship amount in dollars is . . .?
	1. 1,800
	2. 5,000
3. A magazine subscription has an annual price, billed quarterly. How much is each bill, if the annual price in dollars is . . .?
	1. 48
	2. 80

### 17.3: Your Problems Are Compounded

Match each item in the first column to a representation in the second column.

1. A worker sets aside $6,000 per year for their retirement fund by saving the same amount monthly.

A.

2. A business’s revenue increases by 20% per quarter. This happens for 2 years. Initially, their quarterly profit was $6,000.

B.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 1 | 2 | 3 | 4 | 5 |
|  | 6,000 | 7,200 | 8,640 | 10,368 | 12,442 | 14,930 |

3.

C.

4. A man borrows $6,000 from his sister. He will reduce the amount he owes in 1 year by paying her back quarterly.

D.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 1 | 2 | 3 | 4 | 5 |
|  | 6,000 | 4,800 | 3,840 | 3,072 | 2,457.6 | 1,966.1 |

5. A business’s revenue decreases by 20% semi-annually. This happens for 3 years. Initially, their quarterly revenue was $6,000.

E.

6. The number of subscribers to a website triples quarterly for 2 years. Initially there were 6 subscribers.

F.

7.

G.



8. The number of likes on a post was 6, and then for the next 2 years, the number of likes doubled, monthly.

H.





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