

## 5.2 Classwork: Simple interest rates

I can calculate simple interest

CCSS.HSF.IF.C.7

1. Do Now: Simplify each expression to the base raised to a power.

(a)  $5^2 \times 5^4$

(c)  $a^5 \times a^3$

(b)  $\frac{11^7}{11^5}$

(d)  $\left(\frac{x^6}{x^4}\right)^3$

2. A bank account earns interest at an annual interest rate of 3.925%. The initial deposit is \$175. Which equation models the value of the balance?

(a)  $FV = 175 \cdot 3.925^t$

(c)  $FV = 175 \cdot \left(\frac{3.925}{100}\right)^t$

(b)  $FV = 175(1 + 0.03925)^t$

(d)  $FV = 175 \cdot e^{0.03925t}$

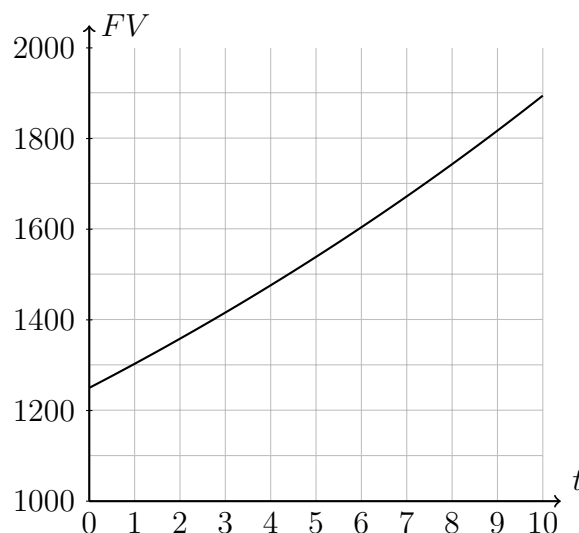
3. Carlos puts \$12,500 into an investment account with an annual interest rate of 3.15%. What is the balance after 5 years?

4. The graph shows the exponential function  $FV = 1,250 \times \left(1 + \frac{4.25}{100}\right)^t$  representing the balance of an investment account earning a fixed rate of interest over  $t$  in years.

- (a) Write down the initial deposit in the account.

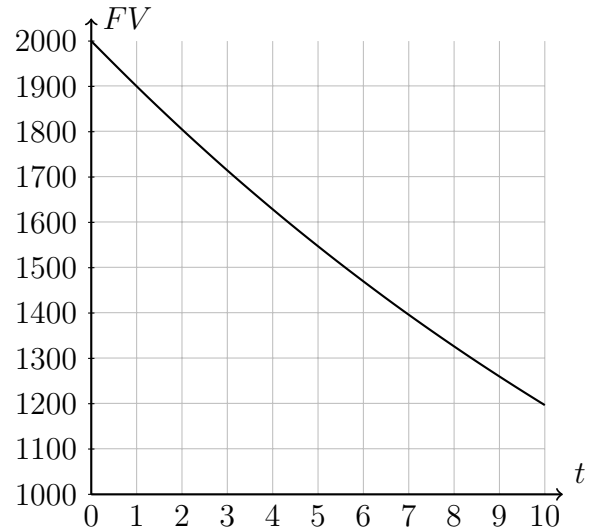
- (b) How much will the account hold at the end of ten years, to the nearest \$000?

- (c) When will the balance be \$1,600?



5. An asset depreciates at a constant percentage rate, losing 5% of its value each year. The asset's value is modeled by the exponential function  $FV = 2,000 \times \left(1 - \frac{5}{100}\right)^t$ , shown below, where  $t$  is the time in years.

- (a) Write down the initial value of the asset.
- (b) How much will the asset be valued at the end of ten years, to the nearest \$000?
- (c) When will the asset have lost one-quarter of its value?



6. Maria purchases an investment property for \$100,000. Under a special benefit in the tax code, she is allowed to depreciate the asset at 10% annually.

- (a) How much can she deduct from her income for tax purposes the first year?
- (b) Write an algebraic expression to model the depreciated value of Maria's property.
- (c) If she holds it for three years, at what value will it be held on her books?
- (d) Make a sketch to represent the graph of the asset's depreciated value over ten years.
- (e) She plans to sell the property when it is depreciated to one-half of the purchase value. Find the number of years she expects to hold the property and mark that point on your sketch.