Prerequisite Skills

Proportional Thinking

1. How many weeks are in each time period?
   a) 2 months
   b) 3 years
   c) 10 years
   d) $9\frac{1}{4}$ years

2. How many days are in each time period?
   a) 3 weeks
   b) 2.5 months
   c) 4 years
   d) $10\frac{1}{5}$ years

3. Depositing $25.50 per week means depositing how much in each time period?
   a) 3 weeks
   b) $7\frac{1}{2}$ months
   c) 3 years
   d) $4\frac{1}{6}$ years

4. Earning $56 000 in one year means earning an average of how much in each time period?
   a) 2 months
   b) 3 weeks
   c) 1 day

5. How many payments are made in $1\frac{1}{2}$ years for each payment frequency?
   a) semi-annually
   b) bi-monthly
   c) bi-weekly
   d) quarterly

Compound Interest

6. For each annual rate, r, determine i, the interest rate per compounding period. Round answers to four decimal places, where necessary.

	r (%)	Compounding Frequency
a)	5	monthly
b)	12.75	quarterly
c)	−1.25	weekly
d)	2.75	semi-annually
e)	0.45	daily
f)	21.65	annually

7. Determine n, the number of compounding periods, for each situation.
   a) semi-annual compounding for five years
   b) quarterly compounding for three years
   c) monthly compounding for four years
   d) daily compounding for seven months
   e) daily compounding for one year
   f) monthly compounding for 25 years

Work with Exponents

8. Complete each table.
   a)

x	$y = 3^x$	First Differences	Common Ratio
0			
1			
2			
3			
4			
5			

b)

x	$y = 0.25^x$	First Differences	Common Ratio
0			
1			
2			
3			
4			
5			

9. Without calculating, predict whether each exponential expression will give a value greater than or less than the initial value.

	Initial Value ($)	Exponential Expression
a)	150	$150(1.001)^{-1}$
b)	3 375	$3375(0.065)^2$
c)	10 256	$10\,256(1.0089)^{-4}$
d)	2 299	$2\,299(1.001\,32)^{25}$
e)	89	$89\left(\dfrac{1}{6}\right)^6$
f)	75 000	$75\,000(0.55)^{-3}$

10. Calculate the value of each exponential expression in question 9. Round your answer to four decimal places.

11. Determine the future value, *FV*, of each amount using the formula $FV = PV(1 + i)^n$, where *PV* is the amount of the investment, *i* is the interest rate per compounding period, and *n* is the number of compounding periods.
  a) $500 is invested at 2.25% per year, compounded annually, for seven years.
  b) $4500 is invested at 3.75% per year, compounded quarterly, for three years.
  c) $25 500 is invested at 2.75% per year, compounded monthly, for two years.

12. Complete each table.

a)

x	$y = 750 + 750(0.25)^x$
0	
1	
2	
3	
4	
5	

b)

x	$y = 750(1.25)^x$
0	
1	
2	
3	
4	
5	

13. Use graphing technology to graph each relation from question 11.