

**Key Words**

Match each term with an example.

Term	Example
1. zero principle	A answer to $(-5) \times (-4)$
2. opposite integers	B $15 + (-15) = 0$
3. positive integer	C $-2$ and $4$
4. negative integer	D $-20$ and $20$
	E answer to $(-15) \div 3$

**11.1 Add Integers, pages 350–355**

5. Simplify.
- a)  $5 + 7$                       b)  $-13 + 13$   
 c)  $-5 + (-12)$               d)  $8 + (-15)$   
 e)  $-17 + 9$                     f)  $-3 + (-6) + (-9) + 5$
6. Find each sum.
- a)  $20 + 7$                       b)  $6 + (-6)$   
 c)  $-11 + 5$                     d)  $-2 + (-8)$   
 e)  $12 + 6 + (-4)$   
 f)  $5 + 13 + (-5) + (-10) + 3$
7. The table shows the change in the population of Smallville at each census since 1971.

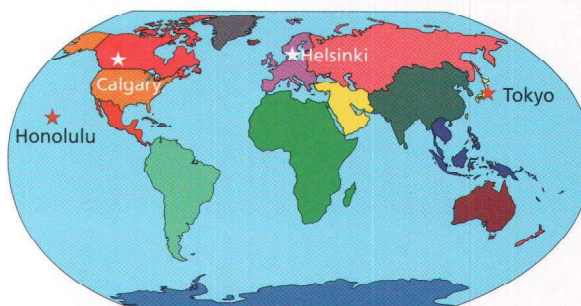
Year	Change
1971	-20 000
1976	-82 000
1981	+24 000
1986	-12 000
1991	+17 000
1996	+21 000
2001	-33 000

What was the overall change in population?

**11.2 Subtract Integers, pages 356–360**

8. Evaluate each expression. Do not use a calculator.
- a)  $10 - 15$                       b)  $-5 - 7$   
 c)  $-14 - (-22)$               d)  $-53 - 42 - (-25)$
9. Find each difference.
- a)  $10 - 5$                         b)  $-16 - 14$   
 c)  $-5 - (-5)$                   d)  $11 - (-9)$
10. The table shows each city's time zone relative to GMT, or Greenwich Mean Time.

City	Time Zone
Calgary	GMT - 7
Helsinki	GMT + 2
Tokyo	GMT + 9
Honolulu	GMT - 10



- a) How many hours behind Helsinki is Honolulu?  
 b) How many hours ahead of Calgary is Tokyo?

**11.3 Multiply Integers, pages 361–365**

11. For each expression, use a pattern to illustrate the rule for multiplying integers.
- a)  $3 \times (-4)$   
 b)  $-2 \times 5$   
 c)  $-4 \times (-2)$

12. Multiply. Do not use a calculator.

- a)  $7 \times (-2)$
- b)  $-3 \times (-6)$
- c)  $-10 \times 7$
- d)  $15 \times (-4)$
- e)  $-2 \times (-3) \times (-5) \times 10$

13. Explain how you can tell the sign of a product of more than two integers.

14. The average change in the tiger population over the past 100 years is  $-940$  tigers per year.



- a) What was the total change in the tiger population?
- b) What was the change in the tiger population between 1950 and 2000?

#### 11.4 Divide Integers, pages 366–369

15. Divide. Do not use a calculator.

- a)  $35 \div (-5)$
- b)  $-64 \div (-4)$
- c)  $-72 \div 9$
- d)  $-56 \div (-8)$

16. Find all the integers, other than 1 and  $-1$ , that divide evenly into  $-10$ .

17. Write an expression involving integer division for each situation. Evaluate each expression and state its meaning.

- a) While scuba diving, Diane dived 50 m in 10 stages. What was the mean depth of her dive per stage?
- b) A parachutist descended a total of 60 m in 5 s. What was the unit rate of descent?
- c) The temperature dropped  $24^\circ\text{C}$  over 8 h. What was the mean hourly temperature drop?

#### 11.5 Order of Operations With Integers, pages 370–373

18. Evaluate.

- a)  $2 + 5(7 - 10)$
- b)  $-3(6^2 - 30)$
- c)  $4^2 - 5^2$
- d)  $-6 + 12 \div (-2) - 9$

19. The temperature at the top of a 5900-m mountain is  $-44^\circ\text{C}$ . At the bottom, the temperature is  $15^\circ\text{C}$ . What is the mean temperature difference per 100 m?

#### 11.6 Patterns and Trends With Integers, pages 374–379

20. Determine the next four numbers in each pattern. Justify your answers.

- a)  $-3, -6, -9, -12$
- b)  $5, 2, -1, -4$
- c)  $-15, -4, 7, 18$
- d)  $-7, -14, -28, -56$

21. Kathy started a business selling crafts at a flea market. Her initial expenses were \$700 and she expects weekly sales of \$125.

- a) Describe the pattern in her income.
- b) What income can she expect after 2 weeks?
- c) When can Kathy expect to begin to make a profit from her business?