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11-6 Dividing Integers - Practice and Problem Solving

Divide.

9. $-12 \div 4$

$-12 \div 4 = -3$

11. $-32 \div 4$

$-32 \div 4 = -8$

13. $35 \div 7$

$35 \div 7 = 5$

15. $-45 \div 5$

$-45 \div 5 = -9$

17. $81 \div (-9)$

$81 \div (-9) = -9$

19. $-54 \div (-6)$

$-54 \div (-6) = 9$

21. **CAVE EXPLORING** A cave explorer starts at the entrance to a cave and descends 195 meters into the cave in 3 hours. If the explorer traveled an equal distance each hour, what integer gives the distance and direction traveled each hour relative to the entrance of the cave?

$-195 \div 3 = -65$
The integer –65 gives the distance traveled each hour.

23. **ALGEBRA** What value of m makes $48 \div m = -16$ true?

$48 \div -3 = -16$
The value of m is –3.

Find the value of each expression.

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25. $\dfrac{\left[4+(-6)\right]\times(-1+7)}{-3}$

$$\frac{\left(4+(-6)\right)\times(-1+7)}{-3}=\frac{-2\times 6}{-3}$$
$$=\frac{-12}{-3}\text{ or }-12\div(-3)$$
$$=4$$

27. **FIND THE DATA** Refer to the Data File on pages 16-19. Choose some data and write a real-world problem in which you would divide integers.

See students' work.

HOT AIR BALLOONS The table shows the change in altitude over time for several hot air balloons at a ballooning festival.

Balloon	Change in Altitude (ft)	Time (min)	Balloon	Change in Altitude (ft)	Time (min)
Air Adam	−3,600	120	Flying Felicia	800	50
Benji's Balloon	−1,200	60	Jersey Jen	−2,700	135
Captain Kate	480	30	Magnificent Meg	−1,500	60
Daring Diego	−350	14	Soaring Susana	720	30

29. For the balloons listed in the table that descended, find the median change in altitude in feet per minute.

Only the altitude of the balloons that descended are to be considered which would include -3600, -1200, -350, -2700, and -1500. To find the median, arrange these from smallest to largest: -350, -1200, -1500, -2700, and -3600.

The median is the middle number which is -1500. To find the altitude in feet per minute, divide the altitude, -1500, by its time, 60. $-1500\div 60=-25$.
So, the median change in altitude in feet per minute is -25 ft/min.

31. **OPEN ENDED** Write a division sentence whose quotient is −9. Then describe a real-world situation that this division sentence could represent.

Sample answer: −45 ÷ 5; An elevator descends 45 floors in 5 seconds. Which integer represents the number of floors the elevator descends each second?

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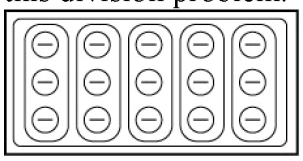
33. **SELECT A TOOL** Melissa wants to show her brother how to divide –15 by 3. Which of the following tools might Melissa use to show this division problem? Justify your selection(s). Then use the tool(s) to demonstrate this division problem.

paper/pencil	counters	paper plates

Sample answer: Algebra tiles; manipulatives would allow Melissa's brother to see how to perform this division problem.



35. **CHALLENGE** If $x \div y$ is negative, what is the sign of xy? Explain.

negative; Sample answer: The quotient of x and y integers is negative only when x and y have different signs. Thus, if x and y have different signs, the product of x and y will also be negative.

37. During the past week, Mrs. Hirosho recorded the following amounts in her checkbook: \$20, –\$53, –\$62, and –\$27. Which expression can be used to find the average of these amounts?

A $[20 + (–53) + (–62) + (–27)] \div 4$
B $(20 + 53 + 62 + 27) \div 4$
C $20 + 53 + 62 + 27 \div 4$
D $20 + (–53) + (–62) + (–27) \div 4$

The average is the sum of the amounts divided by 4.
$\left[20(-53) + (-62) + (-27)\right] \div 4$
The answer is A.

39. **MONEY** Brianna and 5 of her friends bought a pack of six fruit juices after their lacrosse game. If the pack costs \$3.29, how much does each person owe to the nearest cent if the cost is divided equally? Use the *work backward* strategy.

$3.29 \div 6 \approx 0.55$
Each person owes \$0.55.

41. **WEATHER** Find the median of the temperatures –9°F, 7°F, –4°F, –1°F, and 11°F.

Arrange the numbers from least to greatest.
–9, –4, –1, 7, 11
–1°F is in the middle so that is the median.

Add or subtract.

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43. 17 min 45 s
– 9 min 24 s

$$\begin{array}{rr} 17 \text{ min} & 45 \text{ s} \\ -9 \text{ min} & 24 \text{ s} \\ \hline 8 \text{ min} & 21 \text{ s} \end{array}$$

45. 25 min 17 s
– 12 min 38 s

$$\begin{array}{rrcrr} 25 \text{ min} & 17 \text{ s} & \Rightarrow & 24 \text{ min} & 77 \text{ s} \\ -12 \text{ min} & 38 \text{ s} & \Rightarrow & -12 \text{ min} & 38 \text{ s} \\ \hline & & & 12 \text{ min} & 39 \text{ s} \end{array}$$

Write each percent as a fraction in simplest form.

47. 28%

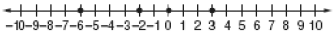
$$28\% = \frac{28}{100} = \frac{7}{25}$$

49. 85%

$$85\% = \frac{85}{100} = \frac{17}{20}$$

PREREQUISITE SKILL Draw a number line from –10 to 10. Then graph each point on the number line.

51. 0



53. –6