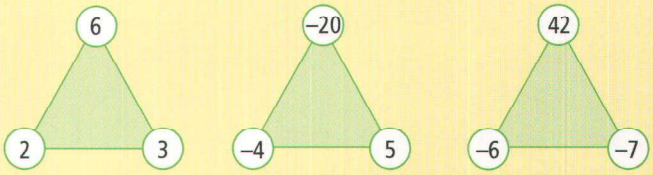
6.40 - Questions Handout #s 4 - 17

Key Ideas

- You can use triangles to illustrate division of integers.



- When dividing two integers,
  - if the signs are the same, the quotient is positive
  - if the signs are different, the quotient is negative

$6 \div 2 = 3$, $6 \div 3 = 2$, and $-20 \div (-4) = 5$

$-20 \div 5 = -4$, $42 \div (-6) = -7$, and $42 \div (-7) = -6$

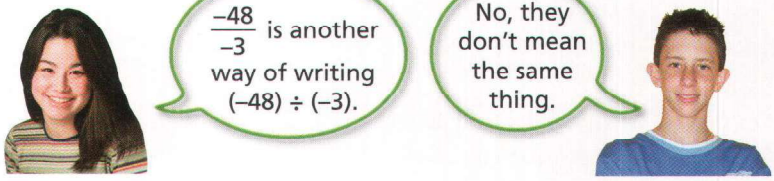
To multiply and divide integers, follow the same sign rules. But watch out for adding and subtracting! These are different.

Communicate the Ideas

1. Explain why $56 \div (-7)$ and $-56 \div 7$ give the same result.

2. Which is greater,
a) $45 \div 9$ or $45 \div 5$? **b)** $-45 \div 9$ or $-45 \div 5$?
Explain why the results differ.

3. Who is correct? Explain.



Check Your Understanding

Practise

4. Draw a triangle for each multiplication statement. Then, write the related division statements.
a) $8 \times (-2) = -16$ **b)** $-7 \times 5 = -35$
c) $-3 \times (-9) = 27$ **d)** $15 \times (-10) = -150$

For help with questions 5 and 6, refer to Example 1.

5. Find each quotient.
a) $12 \div 3$ **b)** $-18 \div (-2)$
c) $56 \div (-7)$ **d)** $-100 \div (-10)$

6. Divide.
a) $12 \div 3$ **b)** $-20 \div (-4)$
c) $\frac{-39}{3}$ **d)** $\frac{50}{-10}$

7. Copy each statement. Replace each ▭ to make the statement true.
a) $48 = ▭ \times (-6)$
b) $-25 = ▭ \times (-5)$
c) $▭ \times (-6) = -18$
d) $▭ \times 10 = -60$
e) $-38 = ▭ \times 19$
f) $63 = ▭ \times (-9)$

For help with questions 8 to 10, refer to Example 2.

8. A stock decreased in price by $25 over 4 days. What was the mean daily decrease in price?

9. A diver rose a total of 30 m in 6 stages. What was the mean rise per stage?

10. The temperature decreased by 10°C from 6 P.M. to 10 P.M. What was the mean hourly decrease in temperature?

Apply

11. List all the integers that divide evenly into each.

a) −15 **b)** −24

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

a) You owe your parents $35, to be paid in five equal instalments. How much is each instalment?

b) The temperature dropped a total of 18°C over a 9-h period. What was the mean hourly temperature drop?

13. Make up a question similar to those in question 12. Give it to a classmate to solve. Check to make sure your classmate has answered the question properly.

14. For a science project, Warren researched low temperatures in five Ontario cities.

City	Temperature (°C)
London	−2
Thunder Bay	−12
Brockville	−6
Sudbury	−8
Sarnia	+1

a) Find the mean low temperature for these cities.

b) If each temperature were actually 2°C warmer, how would it affect the mean?

15. Eleanor is tracking a whale. It descends at a steady rate of 120 m in 20 min.

a) What is the whale's unit rate of descent?

b) How far does the whale descend in 10 min?

c) How for does the whale descend in 16 min?

d) The whale needs to come to the surface to breathe after 45 min under water. How deep can it dive if it descends and ascends at the same steady rate?

Making Connections

You learned about unit rates in Chapter 5.

16. At midnight, the temperature in Iqaluit was −15°C. At noon, it was −5°C. What was the mean hourly increase in temperature from midnight to noon?

Try This!

17. Write a related division statement for each product. Then, write an example to go with it.

For example, for $8 \times (-2) = -16$:

$-16 \div (-2) = 8$: A diver dives 2 m/s. How long has she been diving when she is at a depth of 16 m?

a) $9 \times (-5) = -45$

b) $-4 \times (-7) = 28$

c) $-6 \times 6 = -36$

Extend

18. The mean noon temperature during one week was −4°C. Give two examples of what the temperatures might have been each day of the week. Justify your answer.

19. a) Evaluate 5^2 and 6^2. Then, evaluate $(-5)^2$ and $(-6)^2$. What do you notice?

b) Can the result of squaring a number ever be negative? Explain.