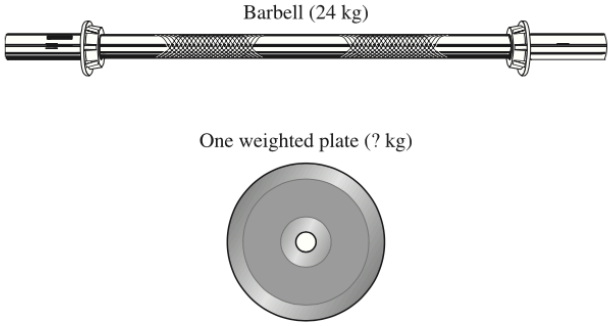
# Pattern and Relations 3

Name:_____

*Use the following information to answer question 17.*

A weight-lifter adds a certain number of equally weighted plates to the barbell shown below. The weighted plates are identical to one another.




**17.** If the total mass of the barbell and plates equals 60 kg, and if each side of the barbell has the same number of plates, then one weighted plate could have a mass of

**A.** 36 kg
**B.** 12 kg
**C.** 6 kg
**D.** 4 kg

**18.** Marc has a certain number of coins that are dimes, $d$, and quarters, $q$. Which of the following expressions represents the value of Marc's money in cents?

**A.** $10d + 25q$
**B.** $35(d + q)$
**C.** $35d + q$
**D.** $d + q$

*Use the following equation to answer question 24.*

$$2.15x + 7.8 = 25$$

**24.** Which of the following equations is equivalent to the equation shown above?

**A.** $215x + 780 = 2\,500$
**B.** $215x + 780 = 250$
**C.** $215x + 78 = 2\,500$
**D.** $215x + 78 = 25$

*Use the following information to answer numerical-response question 7.*

Alan, Bob, and Charles worked together on a job and earned a combined total of $380. Alan earned $40 less than Bob. Charles earned twice as much as Alan.

**Numerical Response**

**7.** How much did Alan earn?

**Answer:** $ _____

(Record your answer in the numerical-response section on the answer sheet.)

# Pattern and Relations 3

Name:_____

*Use the following information to answer numerical-response question 1.*

A piggy bank contains only quarters and nickels, and there is a total of 60 coins. The total value of the coins in the bank is $7.40.

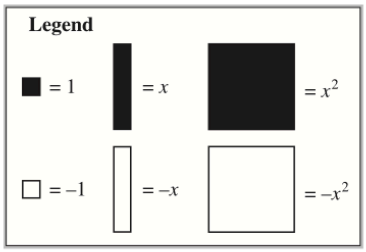
**Numerical Response**

**1.** How many quarters are in the piggy bank?

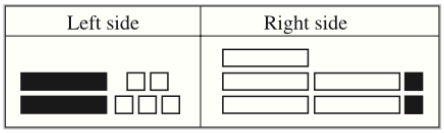
**Answer:** _____

(Record your answer in the numerical-response section on the answer sheet.)

*Use the following information to answer question 9.*




The left and right sides of an equation are represented below.




**9.** The solution to the equation above can be represented by

**A.** ▬ = ■

**B.** ▬ = ■ ■

**C.** ▬ = □

**D.** ▬ = □ □

# Pattern and Relations 3

Name:_____

*Use the following information to answer question 17.*

Tara, Jennifer, and Mindy donated some money to a charity. Jennifer donated twice as much as Tara, and Mindy donated $10 less than Jennifer.

**17.** If the **total** amount donated to the charity is $50, then how much money did Tara donate?

**A.** $6
**B.** $8
**C.** $12
**D.** $24

The total length of time it takes for a single passenger train to travel between Vancouver and Toronto is 80 h.

| Starting Location | Ending Location | Time (h) |
|---|---|---|
| Vancouver | Jasper | $\frac{5}{9}x$ |
| Jasper | Winnipeg | $\frac{2}{3}x$ |
| Winnipeg | Toronto | $x$ |

**21.** How long does it take the train to travel between Winnipeg and Toronto?

**A.** 24 h
**B.** 36 h
**C.** 44 h
**D.** 53 h

**31.** The value of $x$ in the equation $2(x + 5) - 12 = 50$ is

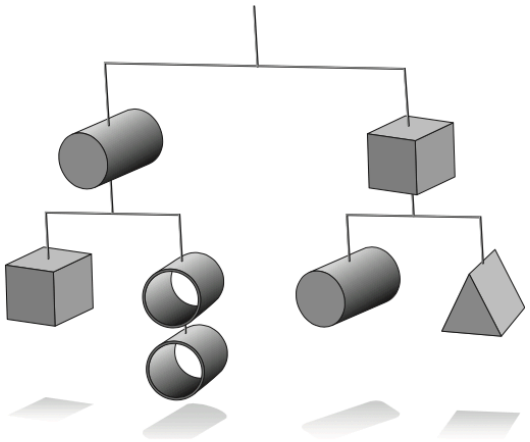
**A.** 24
**B.** 26
**C.** 32
**D.** 36

# Pattern and Relations 3

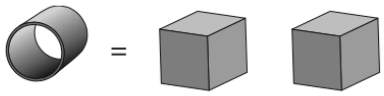
Name:_____

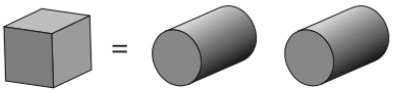
*Use the following information to answer question 34.*

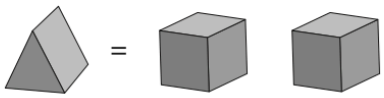
The following diagram represents a balanced mobile.



**34.** Which of the following equations correctly represents the relationship between some of the objects shown in the diagram above?

**A.** 

**B.** 

**C.** 

**D.**

**Numerical Response**

**6.** The value of $x$ in the equation $\frac{x}{5} + 1 = 26$ is _____.

(Record your answer in the numerical-response section on the answer sheet.)

# Pattern and Relations 3

Name:_____

*Use the following information to answer numerical-response question 10.*

Patricia wants to buy a new pair of ice skates that cost $250 including GST. She already has $86 she plans to use towards this purchase. She earns $10.25/hour at her part-time job.

**Numerical Response**

**10.** What is the minimum number of hours that she must work to save enough money to purchase the pair of ice skates?

**Answer: _____ hours**

(Record your answer in the numerical-response section on the answer sheet.)

The amount of money, $A$, Hanna receives selling bracelets, $b$, at a local market is represented by the relation $A = 5b$. Her expenses, $E$, for making the bracelets are represented by the relation $E = 20 + b$.

**19.** What is the minimum number of bracelets that Hanna needs to sell to pay for her expenses?

**A.** 4 bracelets
**B.** 5 bracelets
**C.** 6 bracelets
**D.** 7 bracelets

*Use the following information to answer question 6.*

Catherine sells cupcakes, $c$, for $1.50 each. The ingredients for each cupcake cost her $0.30, and the sum of all of her other expenses is $20.00/month.

**6.** Which of the following expressions represents Catherine's profit each month?

**A.** $1.5c - (20 + 0.3c)$
**B.** $20c - (1.5 + 0.3c)$
**C.** $(20 + 0.3c) - 1.5c$
**D.** $(1.5 + 0.3c) - 20c$

**15.** The value of $x$ in the equation $3(2x - 1) = \frac{1}{2}(x + 6)$ is

**A.** $\frac{8}{11}$

**B.** $\frac{12}{11}$

**C.** $\frac{14}{11}$

**D.** $\frac{18}{11}$

# Pattern and Relations 3

Name:_____

*Use the following information to answer numerical-response question 5.*

In one month, Dale earned $180.00. He earned $45.00 by washing cars, and the rest by mowing lawns.

**Numerical Response**

**5.** How many lawns did Dale mow if he received $9.00 for each lawn that he mowed?

**Answer: _____ lawns**

(Record your answer in the numerical-response section on the answer sheet.)

Amy has already saved $50 toward the purchase of a new camera that has a total cost of $235. She earns the rest of the money she needs to buy the camera by babysitting her sister. Each time she babysits, she is paid $15.

**Numerical Response**

**5.** What is the minimum number of times Amy must babysit her sister in order to earn enough money to purchase the camera?

**Answer: _____ times**

(Record your answer in the numerical-response section on the answer sheet.)

**14.** The value of $x$ in the equation $3(2x - 1) = \frac{1}{2}(x + 6)$ is

**A.** $\frac{8}{11}$

**B.** $\frac{12}{11}$

**C.** $\frac{14}{11}$

**D.** $\frac{18}{11}$