$\qquad$ Date $\qquad$ Class $\qquad$ Lesson Practice B

## 1-6 Relations and Functions

Give the domain and range for each relation. Then determine whether each relation is a function.
1.

| Average High Temperatures |  |
| :--- | :---: |
| Month | Temperature |
| Jun | $82^{\circ}$ |
| Jul | $88^{\circ}$ |
| Aug | $93^{\circ}$ |
| Sep | $82^{\circ}$ |

$\qquad$
$\qquad$
Use the vertical-line test to determine whether each relation is a function. If not, identify two points a vertical line would pass through.
3.

4.

5.


Explain whether each relation is a function.
6. $\{(1,1),(2,2),(3,3),(4,4)\}$
7. from the model of car to the car's ID number
8. from the dates James took math tests to his test scores

## Reteach

1. $c \cdot c$
2. $(3 x y)(3 x y)(3 x y)(3 x y)$
3. $a \cdot a \cdot a(b-c)(b-c)$
4. $\frac{1}{6}$
5. 1
6. $\frac{1}{144}$
7. $-\frac{1}{64}$
8. 49
9. $\frac{64}{27}$
10. -1
11. $\frac{4}{25}$
12. -9
13. $25 a^{2} b^{6}$
14. $w^{6} x^{8}$
15. $y^{2} z^{5}$
16. $\frac{2 s^{2}}{t}$
17. $\frac{a^{12}}{b^{6}}$
18. $\frac{-27 y^{8}}{x^{3}}$

## Challenge

1. -125 and -125
2. -16 and 16
3. Possible answer: $-a^{n}$ is always negative; $\left(-a^{n}\right)$ is negative if $n$ is odd and positive if $n$ is even.
4. True as written
5. $(-3)^{2}+81-3^{4}-3^{2}=0$
6. $4 x^{2}+36 x^{4} y^{4}-\left(6\left(x^{2} y^{2}\right)\right)^{2}-(2 x)^{2}=0$
7. $-(12 a)^{3}+(2 b)^{2}+1728 a^{3}-2 b^{2}-2 b^{2}=0$
8. $\left(2 g^{2}+2 h^{3}-4\right)^{0}+24=25$
9. True as written
10. $(-12 a b c)^{0}-25 d^{2}+(34 a b)^{0}+(5 d)^{2}=2$

## Problem Solving

1. 101 million
2. 1998 to 1999
3. 1995
4. 1995
5. 1994, 1996
6. 36.4
7. B
8. H

## Reading Strategies

1. $g ; 5$
2. $6^{8}$
3. $k^{u} \cdot k^{v}=k^{u+v} ; 2^{2} \cdot 2^{4}=2^{6}$
4. $h^{-7}, \frac{1}{h^{7}}$
5. $x x^{5}$
6. $-2 p^{3}\left(3 s^{3}\right)$
7. $\frac{2 a^{5}}{a^{2}}$ is not simplified because $a$ is a like term; $2 a^{3}$.
8. Use the Negative Exponent and Power of
a Quotient Properties: $\left(\frac{x}{y}\right)^{-2}=\left(\frac{y}{x}\right)^{2}=\frac{y^{2}}{x^{2}}$.

## LESSON 1-6

## Practice A

1. $x$
2. $y$
3. Domain: \{Mon, Tue, Wed, Thu, Fri\};

Range: $\{287,395,128,326,649\}$
4. Domain: $\{-2,-1,0,1\}$;

Range: $\{1,-2\}$
5. This is a function.
6. This is not a function.
7. yes
8. yes
9. no

## Practice B

1. Domain: \{Jun, Jul, Aug, Sep\}; Range: $\left\{82^{\circ}, 88^{\circ}, 93^{\circ}\right\}$; this is a function.
2. Domain: $\{-4,-2,0,2,4\}$; Range: $\{-3,-2$, $4\}$; this is a function.
3. 



This is a function.
4. This is not a function; $(1,1)(1,-4)$
5.


This is a function.
6. Yes, each value of $x$ is associated with only 1 value of $y$.
7. No, each car model is manufactured as many individual cars.
8. Yes, there is only 1 score associated with each test date.

## Practice C

1. Domain: $\{-2,1,3,6\}$; Range: $\{-3,4\}$

2. Domain: $\{0,2,3\}$; Range: $\{-2,-1,1,2\}$

3. Domain: $\{1,2,3,4\}$;

Range: $\{37,38,44,59\}$

4. Domain: $\{-2,-1,0,1,2\}$;

Range: $\{-3,-2,-1,0,2,3\}$

5. not a function; function
6. function; not a function
7. function; not a function
8. not a function; not a function
9. function; not a function
10. not a function; function

## Reteach

1. 2002, 2003, 2004, 2005\}; 28, 35, 42, 46\}
2. $-3,-2,-1,0\} ;-1,0,1,2\}$
3. Function
4. Not a function; possible answer: $(1,0)$, $(1,-2)$

## Challenge

1. $V, W, X, Z ; Y:(3,3)$ does not exist because 3 is not greater than 3.
2. $W, Z ; V: 10$ is a factor of 20 , but 20 is not a factor of $10 ; X: 8$ is a multiple of 4 but 4 is not a multiple of $8 ; Y: 3>2$ but 2 is not greater than 3.
3. $V, W, X, Y, Z \quad$ 4. $W, Z$

## Problem Solving

1. Yes; each calorie value has only one fat value.
2. Yes; each calorie value has only one carbohydrate value.
3. No; the carbohydrate value 12.2 has two calorie values, 102 and 83.
4. D
5. G
6. B
7. H

## Reading Strategies

1. $-2,0,1,2$; domain is the set of $x$ values.
2. 4, 2, $0,-4,-6$; range is the set of $y$ values.
3. Not a function because the $x$ value -2 is repeated
4. The relation is a function because no input values are repeated.

## LESSON 1-7

## Practice A

1. $3 ; 15 ;-6$
2. $1 ; 0 ; 1$

