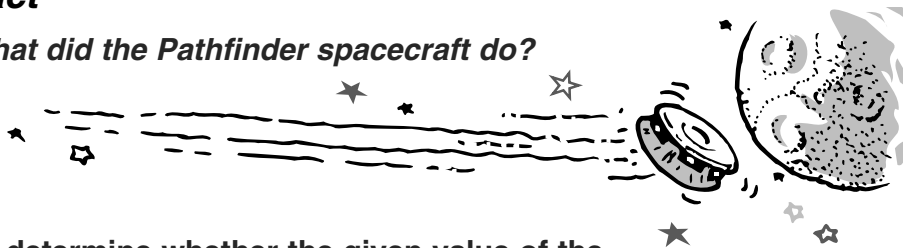Name _____ Date _____ Class _____

Puzzles, Twisters & Teasers

LESSON 2-4 *Space Fact*

On July 4, 1997, what did the Pathfinder spacecraft do?

For each equation, determine whether the given value of the variable is a solution. If it is a solution, circle =. If it is not a solution, circle ≠. Put the letter above the correct answer in the box.
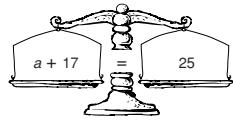
	A	**I**	
1. $117 = 97 + n$ for $n = 10$	=	≠	☐
	T	**S**	
2. $96 \div x = 8$ for $x = 12$	=	≠	☐
	K	**L**	
3. $132 \div m = 12$ for $m = 12$	=	≠	☐
	E	**A**	
4. $k + 18 = 63$ for $k = 44$	=	≠	☐
	N	**M**	
5. $35 \div s = 7$ for $s = 5$	=	≠	☐
	J	**D**	
6. $44 = t - 55$ for $t = 88$	=	≠	☐
	E	**A**	
7. $a - 6 = 36$ for $a = 42$	=	≠	☐
	P	**D**	
8. $u \cdot 7 = 72$ for $u = 8$	=	≠	☐
	I	**O**	
9. $b + 21 = 28$ for $b = 8$	=	≠	☐
	N	**F**	
10. $92 - 28 = 8y$ for $y = 8$	=	≠	☐
	M	**P**	
11. $6x = 54$ for $x = 9$	=	≠	☐
	A	**E**	
12. $149 = 79 + 2y$ for $y = 35$	=	≠	☐
	T	**R**	
13. $17w - 50 = 0$ for $w = 3$	=	≠	☐
	S	**H**	
14. $25g = 25{,}000$ for $g = 1{,}000$	=	≠	☐

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Challenge
Keep It Balanced

Study the scales below. Then circle the solution below each scale that will keep it balanced.

1.

$$a + 17 = 25$$
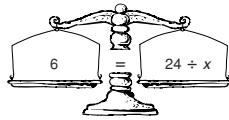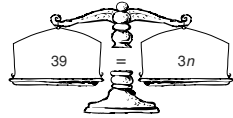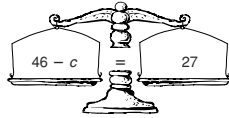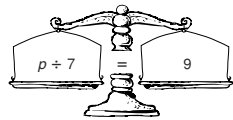
(a = 8)   a = 9

2.

$$6 = 24 \div x$$

x = 3   (x = 4)

3.

$$39 = 3n$$

n = 12   (n = 13)

4.

$$46 - c = 27$$

(c = 19)   c = 29

5.

$$p \div 7 = 9$$

p = 49   (p = 63)

6.

$$52 + m = 100$$
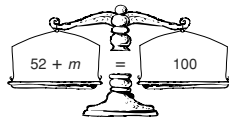
(m = 48)   m = 58

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Problem Solving
Equations and Their Solutions

Use the table to write and solve an equation to answer each question. Then use your answers to complete the table.

1. A hippopotamus can stay underwater 3 times as long as a sea otter can. How long can a sea otter stay underwater?

$3x = 15; x = 5;$

5 minutes

2. A seal can stay underwater 10 minutes longer than a muskrat can. How long can a muskrat stay underwater?

$x + 10 = 22; x = 12;$

12 minutes

3. A sperm whale can stay underwater 7 times longer than a sea cow can. How long can a sperm whale stay underwater?

$x \div 7 = 16; x = 112;$

112 minutes

How Many Minutes Can Mammals Stay Underwater?	
Hippopotamus	15
Human	1
Muskrat	12
Platypus	10
Polar bear	2
Sea cow	16
Sea otter	5
Seal	22
Sperm whale	112

Circle the letter of the correct answer.

4. The difference between the time a platypus and a polar bear can stay underwater is 8 minutes. How long can a polar bear stay underwater?

A 1 minute
(B) 2 minutes
C 3 minutes
D 5 minutes

5. When you divide the amount of time any of the animals in the table can stay underwater by itself, the answer is always the amount of time the average human can stay underwater. How long can the average human stay underwater?

F 6 minutes
G 4 minutes
H 2 minutes
(J) 1 minute

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Reading Strategies
Focus on Vocabulary

You can see the word **equal** in **equation**. In math, an equation indicates that two quantities are equal, or the same. The = **sign** in an equation separates one quantity from the other. The value on each side of the = sign is the same.

Look at the equations below. Notice how the value on each side of the = sign is the same for each equation:

$5 + 7 = 8 + 4$ $19 - 7 = 12$ $42 = 3 \cdot 14$

If an equation contains a variable, and the variable is replaced by a value that keeps the equation equal, that value is called a **solution** of the equation.

Examples: $y \div 4 = 15$ $y \div 4 = 15$
              $80 \div 4 \neq 15$ $60 \div 4 = 15$

"80 divided by 4 is not equal to 15."   "60 divided by 4 is equal to 15."

Which are equations? Write the correct sign, = or ≠.

1. $7 + 23$ ☐ $9 + 21$ _____ = _____

2. $35 + 15$ ☐ 45 _____ ≠ _____

3. $28 - 7$ ☐ $15 + 6$ _____ = _____

Replace the given value for the variable. Is it a solution?

4. $d + 28 = 45$ for $d = 17$ _____ d = 17 is a solution.

5. $84 \div s = 28$ for $s = 3$ _____ s = 3 is a solution.

6. $17 = 56 - t$ for $t = 40$ _____ t = 40 is not a solution.

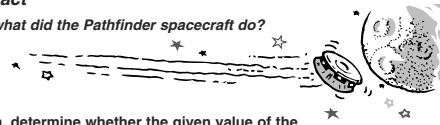**7.** $86 = 4w$ for $w = 24$ _____ w = 24 is not a solution.

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Puzzles, Twisters & Teasers
Space Fact

On July 4, 1997, what did the Pathfinder spacecraft do?

For each equation, determine whether the given value of the variable is a solution. If it is a solution, circle =. If it is not a solution, circle ≠. Put the letter above the correct answer in the box.

	A	I	
1. $117 = 97 + n$ for $n = 10$	=	(≠)	I
	T	S	
2. $96 \div x = 8$ for $x = 12$	(=)	≠	T
	K	L	
3. $132 \div m = 12$ for $m = 12$	=	(≠)	L
	E	A	
4. $k + 18 = 63$ for $k = 44$	=	(≠)	A
	N	M	
5. $35 \div s = 7$ for $s = 5$	(=)	≠	N
	J	D	
6. $44 = t - 55$ for $t = 88$	=	(≠)	D
	E	A	
7. $a - 6 = 36$ for $a = 42$	(=)	≠	E
	P	D	
8. $u \cdot 7 = 72$ for $u = 8$	=	(≠)	D
	I	O	
9. $b + 21 = 28$ for $b = 8$	=	(≠)	O
	N	F	
10. $92 - 28 = 8y$ for $y = 8$	(=)	≠	N
	M	P	
11. $6x = 54$ for $x = 9$	(=)	≠	M
	A	E	
12. $149 = 79 + 2y$ for $y = 35$	(=)	≠	A
	T	R	
13. $17w - 50 = 0$ for $w = 3$	=	(≠)	R
	S	H	
14. $25g = 25,000$ for $g = 1,000$	(=)	≠	S

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