

# 52 Math Puzzles for K – 3

- These puzzles have links to longer puzzle descriptions and solution notes.
- The first few slides have examples of models of possible classroom slides.
- Each slide has animated hints if you want to use them. These hints often have optional solution strategies that provide insights but are not needed for having fun with the puzzles.

# Choose Your Challenge

A  
♣

## Sum Groups 7

**THE CHALLENGE:** Break this whole square into groups of two or three numbers that add up to 7. A group's numbers must share sides. Is there only one way to solve this?

4	2	4	3
3	1	2	5
3	2	3	7
1	5	4	0

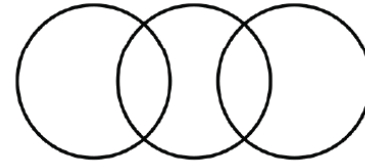
♣  
A

Puzzle – Ace Clubs

3  
♣

## Equal Sums 1

**THE CHALLENGE:** These three circles create 5 regions. Put 1 to 5 once each in these regions so the sum of the numbers in each circle is the same.



1 2 3 4 5

♣  
3

Puzzle – 3 Clubs

What is your strategy?

What are good places to start on this puzzle?

**A**  
**♣**

**Sum  
Groups 7**

**THE CHALLENGE:** Break this whole square into groups of two or three numbers that add up to 7. A group's numbers must share sides. Is there only one way to solve this?

4	2	4	3
3	1	2	5
3	2	3	7
1	5	4	0

**♣**  
**A**

Puzzle – Ace Clubs

## Hints:

Look for very large or very small numbers, especially near corners and sides – they may only have one choice.

Start with 7 and 0. They must go together.

That determines two pairs next to the 7 and 0. The 2 and 5 go together, and the 4 and 3 go together.



## Sum Groups 7

**THE CHALLENGE:** Break this whole square into groups of two or three numbers that add up to 7. A group's numbers must share sides. Is there only one way to solve this?

4	2	4	3
3	1	2	5
3	2	3	7
1	5	4	0



## Puzzle – Ace Clubs

## Hints:

Look for very large or very small numbers, especially near corners and sides – they may only have one choice.

Start with 5 and 1 in the upper left, the 4 and 2 in the upper right, and the 3 and 3 in the lower right.



## Sum Groups 6

**THE CHALLENGE:** Break this whole square into groups of two or three numbers that add up to 6. A group's numbers must share sides. Is there only one way to solve this?

1	5	2	4
3	2	1	5
1	2	3	1
2	4	3	3



## Puzzle – Ace Diamonds

## Hints:

Look for very large or very small numbers, especially near corners and sides – they may only have one choice.

Start with 5 and 1 in the upper left, and the 6 and 0 in the lower right.



## Sum Groups 6

**THE CHALLENGE:** Break this whole square into groups of two or three numbers that add up to 6. A group's numbers must share sides. Is there only one way to solve this?

5	1	2	2
3	1	1	2
1	2	3	6
2	3	2	0



## Puzzle – Ace Hearts

## Hints:

Look for very large or very small numbers, especially near corners and sides – they may only have one choice.

Start with 6 and 1 in the upper left, and the 6 and 1 in the lower left.

A  
♠

## Sum Groups 7

**THE CHALLENGE:** Break this whole square into groups of two or three numbers that add up to 7. A group's numbers must share sides. Is there only one way to solve this?

6	1	4	1
4	5	2	3
3	2	3	4
1	6	3	1

♥  
A

## Puzzle – Ace Spades

## Hints:

Look for very large or very small numbers, especially near corners and sides – they may only have one choice.

Start with 5 and 4 in the upper right, the 7 and 2 just below that, and the 5 and 4 just to the left of those two pairs.

2  
♣

## Sum Groups 9

**THE CHALLENGE:** Break this whole square into groups of two or three numbers that add up to 9. A group's numbers must share sides. Is there only one way to solve this?

5	5	4	5
2	4	2	7
2	6	3	6
1	8	1	2

♣  
2

## Puzzle – 2 Clubs



## Hints:

Look for very large or very small numbers, especially near corners and sides – they may only have one choice.

Start with 7 and 1 in the lower right, the 3 and 5 just above that, and the 2 and 6 in the upper left.

2  
♦

## Sum Groups 8

**THE CHALLENGE:** Break this whole square into groups of two or three numbers that add up to 8. A group's numbers must share sides. Is there only one way to solve this?

2	3	5	3
6	4	3	2
2	4	3	5
4	2	1	7

♦  
2

## Puzzle – 2 Diamonds

## Hints:

Look for very large or very small numbers, especially near corners and sides – they may only have one choice.

Start with 8 and 0 in the upper left, and the 7 and 1 in the lower right.

2  
♥

## Sum Groups 8

**THE CHALLENGE:** Break this whole square into groups of two or three numbers that add up to 8. A group's numbers must share sides. Is there only one way to solve this?

0	8	3	2
2	4	4	3
6	5	5	7
1	2	3	1

♥  
2

## Puzzle – 2 Hearts

## Hints:

Look for very large or very small numbers, especially near corners and sides – they may only have one choice.

Start with 7 and 2 on the left side, and the 8 and 1 in the lower left.

2  
♠

## Sum Groups 9

**THE CHALLENGE:** Break this whole square into groups of two or three numbers that add up to 9. A group's numbers must share sides. Is there only one way to solve this?

5	4	3	6
7	4	2	3
2	5	3	6
8	1	1	3

♠  
2

## Puzzle – 2 Spades

## Hints:

In a puzzle like this, it often helps to find a way to put together several of the same sum so that it involves all the numbers – and look at the situation in two ways.

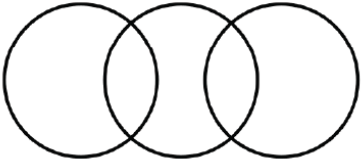
Add up the three circles not concerning yourself with overlaps. That adds up to three times the sum of one circle. It is also the sum of all the numbers plus the two numbers in the overlap regions. That means that 3 times the sum of a circle is 15 plus the two overlaps.

The smallest the two overlaps can add up to is  $1 + 2$ , and the largest is  $4 + 5$ . So, the sum for each circle is either 6, 7, or 8.

**3**  
♣

### Equal Sums 1

**THE CHALLENGE:** These three circles create 5 regions. Put 1 to 5 once each in these regions so the sum of the numbers in each circle is the same.



1 2 3 4 5

♣  
3

## Puzzle – 3 Clubs

## Hints:

Look for very large or very small numbers, especially near corners and sides – they may only have one choice.

Sometimes there is no place that qualifies. On this puzzle, the 4 on the right side has no good match other than the 6 below it. After that, the 2 - 3 - 5 trio along the top must go together.

# 3



## Sum Groups 10

**THE CHALLENGE:** Break this whole square into groups of two or three numbers that add up to 10. A group's numbers must share sides. Is there only one way to solve this?

1	5	3	2
4	3	7	4
5	3	5	6
3	4	1	4



# 3

## Puzzle – 3 Diamonds

## Hints:

In a puzzle like this, it often helps to find a way to put together several of the same sum so that it involves all the numbers – and look at the situation in two ways.

Add up the three sides not concerning yourself with overlaps at the corners. That adds up to three times the sum of one side. It is also the sum of all the numbers plus the three numbers in the corners. That means that 3 times the sum of a side is 21 plus the three corners.

The smallest the three corners can add up to is  $1 + 2 + 3$ , and the largest is  $4 + 5 + 6$ . So, the sum for each side is either 9, 10, 11, or 12.

If you start with one solution, you can arrive at another by subtracting all the entries from 7. This reduces the search to just finding answers for sums 9 and 10.

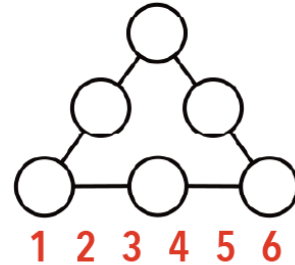
# 3



## Magic Triangles 1

The circles on each side of a *Magic Triangle* add up to the same thing.

**THE CHALLENGE:** Use 1 to 6 once each to make Magic Triangles. How many ways can you do it?



## Puzzle – 3 Hearts



## Hints:

Look for very large or very small numbers, especially near corners and sides – they may only have one choice.

Start with 9 and 1 in the lower right, the 5 and 5 above that, and the 3 and 7 to the left of those two pairs.

3  
♠

## Sum Groups 10

**THE CHALLENGE:** Break this whole square into groups of two or three numbers that add up to 10. A group's numbers must share sides. Is there only one way to solve this?

8	9	1	3
1	1	3	4
6	3	5	5
4	7	1	9

♠  
3

## Puzzle – 3 Spades

## Hints:

In a puzzle like this, it often helps to find a way to put together several of the same sum so that it involves all the numbers – and look at the situation in two ways.

Add up the three circles not concerning yourself with overlaps. That adds up to three times the sum of one circle. It is also the sum of all the numbers plus the three numbers in the overlap regions. That means that 3 times the sum of a circle is 21 plus the three overlaps.

The smallest the three overlaps can add up to is  $1 + 2 + 3$ , and the largest is  $4 + 5 + 6$ . So, the sum for each circle is either 9, 10, 11, or 12.

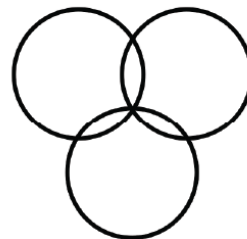
If you start with one solution, you can find another by subtracting all the entries from 7. This reduces the search to just finding answers for sums 9 and 10.

4



## Equal Sums 2

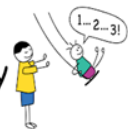
**THE CHALLENGE:** These three circles create 6 regions. Put 1 to 6 once each in these regions so the sum of the numbers in each circle is the same.



1 2 3 4 5 6



## Puzzle – 4 Clubs





## Hints:

In a puzzle like this, it often helps to find a way to put together several of the same sum so that it involves all the numbers – and look at the situation in two ways.

Add up the three lines not concerning yourself with overlap in the center. That adds up to three times the sum of one line. It is also the sum of all the numbers plus the center two extra times. That means that 3 times the sum of a line is 28 plus two times the center.

The smallest the center can be is 1, and the largest is 7. So, the sum for each line is either 10 (center 1), 12 (center 4), or 14 (center 7).

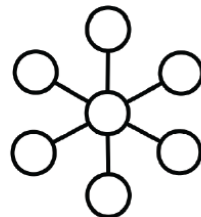
If you start with one solution, you can find another by subtracting all the entries from 8. This reduces the search to just finding answers for sums 10 or 12.

# 4



## Magic Flowers 1

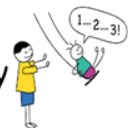
The sums in a *Magic Flower* are the same for all straight lines of three circles.



**THE CHALLENGE:** Use the numbers 1 to 7 to make Magic Flowers using this diagram. Is there more than one way to do it?



## Puzzle – 4 Diamonds



## Hints:

In a puzzle like this, it often helps to find a way to put together several of the same sum so that it involves all the numbers – and look at the situation in two ways.

Add up the three lines not concerning yourself with overlaps in the corners. That adds up to three times the sum of one line. It is also the sum of all the numbers plus the three numbers in the corners. That means that 3 times the sum of a line is 45 plus the three corners.

The smallest the three overlaps can add up to is  $1 + 2 + 3$ , and the largest is  $7 + 8 + 9$ . So, the sum for each line is either 17, 18, 19, 20, 21, 22, or 23.

If you start with one solution, you can find another by subtracting all the entries from 10. This reduces the search to finding answers for sums 17, 18, 19, and 20.

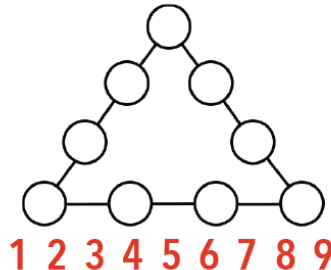
# 4



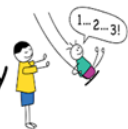
## Magic Triangles 2

The circles on each side of a *Magic Triangle* add up to the same thing.

**THE CHALLENGE:** Use 1 to 9 once each to make Magic Triangles. How many ways can you do it?



## Puzzle – 4 Hearts



## Hints:

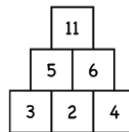
There are many solutions.

Notice that the top number is the sum of the two bottom corners plus two times the middle bottom number.

For more of a challenge, find the Sum Pyramid with six numbers that has the smallest value for the top number.

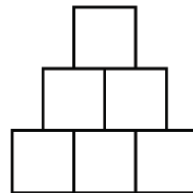
4  
♠

## Sum Pyramids 1

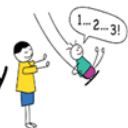


In a **Sum Pyramid**, each number is the sum of the two numbers below it.

**THE CHALLENGE:** Use the numbers from 1 to 10, at most once, to make a Sum Pyramid.



Puzzle – 4 Spades



## Hints:

In a puzzle like this, it often helps to find a way to put together several of the same sum so that it involves all the numbers – and look at the situation in two ways.

Add up the three circles not concerning yourself with overlaps. That adds up to three times the sum of one circle. It is also the sum of all the numbers (28), plus the three numbers in the single overlap regions, plus twice the center number.

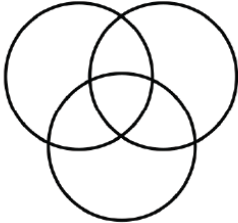
The smallest the the four overlaps can be is  $(1 + 1) + 2 + 3 + 4 = 11$ , and the largest is  $(7 + 7) + 4 + 5 + 6 = 29$ . So, the sum for each circle is between 13 and 19.

If you start with one solution, you can find another by subtracting all the entries from 8. This reduces the search to just finding answers for sums 13 to 16.

**5**  
♣

### Equal Sums 3

**THE CHALLENGE:** These three circles create 7 regions. Put 1 to 7 once each in these regions so the sum of the numbers in each circle is the same.



1 2 3 4 5 6 7

♣  
5

## Puzzle – 5 Clubs

## Hints:

In a puzzle like this, it often helps to find a way to put together several of the same sum so that it involves all the numbers – and look at the situation in two ways.

Add up the four lines not concerning yourself with overlaps. That adds up to four times the sum of one line. It is also the sum of all the numbers (45), plus three times the central number.

The smallest the center can be is 1, and the largest is 9. So, the sum for each line is between 12 to 18.

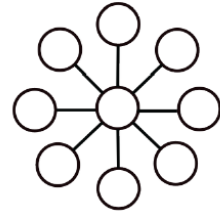
If you start with one solution, you can find another by subtracting all the entries from 10. This reduces the search to finding answers for sums between 12 and 15.

# 5



## Magic Flowers 2

The sums in a *Magic Flower* are the same for all straight lines of three circles.



**THE CHALLENGE:** Use the numbers 1 to 9 to make Magic Flowers using this diagram. Is there more than one way to do it?



## Puzzle – 5 Diamonds

## Hints:

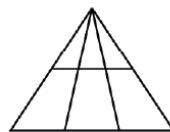
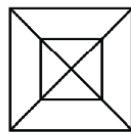
Be organized! The challenge is to identify the shapes and sizes of the different types of triangles and trapezoids that occur, and then count the number for each type.

5  
♥

## Finding the Pieces 1

A **trapezoid** has exactly one pair of parallel sides.

**THE CHALLENGE:** Count the number of triangles and trapezoids in these two figures.



♥  
5

Puzzle – 5 Hearts

## Hints:

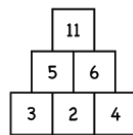
There are many solutions.

After a few are done, notice that the top number is the sum of the two bottom corners plus three times the sum of the two middle bottom numbers. Why?

For more of a challenge, find the Sum Pyramid with ten numbers that has the smallest value for the top number.

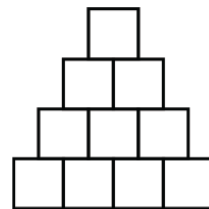
5  
♠

## Sum Pyramids 2



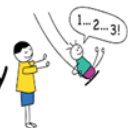
In a **Sum Pyramid**, each number is the sum of the two numbers below it.

**THE CHALLENGE:** Use the numbers from 1 to 25, at most once, to make a Sum Pyramid.



♠  
5

Puzzle – 5 Spades



## Hints:

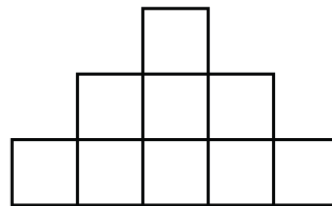
The two numbers 1 and 9 are different from the rest for this puzzle – why?

What are good places for 1 and 9 to go?

6  
♣

## Consecutive Numbers 1

**THE CHALLENGE:** Place the numbers from 1 to 9 so the boxes for consecutive numbers do not share a side or touch diagonally.



1 2 3 4 5 6 7 8 9

♣  
9

Puzzle – 6 Clubs



## Hints:

The sum of the numbers from 1 to 8 is 36.

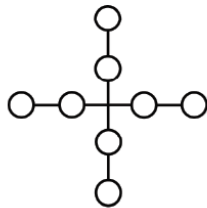
Half the numbers are used in one direction, and half in the other direction; so the sum for each line is 18. There are lots of solutions.

6



## Magic Pluses

The sums in a *Magic Plus* are the same for all straight lines of four circles.

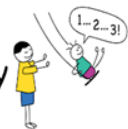


**THE CHALLENGE:** Use the numbers 1 to 8 to make Magic Pluses using this diagram. Is there more than one way to do it?



9

## Puzzle – 6 Diamonds



## Hints:

Many of the shapes are rotated or flipped from the way you would expect.

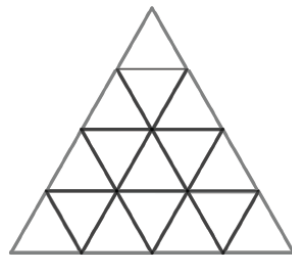
Be organized! The challenge is to identify the shapes and sizes of the different types of triangles, trapezoids, and parallelograms that occur, and then count the number for each type.

6  
♥

## Finding the Pieces 2

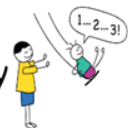
A **trapezoid** has one pair of parallel sides, a **parallelogram** has two pairs.

**THE CHALLENGE:** Count the number of triangles, trapezoids, and parallelograms in this pyramid.



♥  
9

Puzzle – 6 Hearts



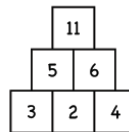
## Hints:

For a six-number pyramid, the top number will always be the sum of the two bottom corners plus twice the bottom number in the middle.

So,  $15 - 3 = 12$  is the bottom left corner plus twice the bottom middle. The possibilities for 12 are  $2 + 2(5)$ ,  $4 + 2(4)$ ,  $6 + 2(3)$ ,  $8 + 2(2)$ , and  $10 + 2(1)$ . Which ones work out?

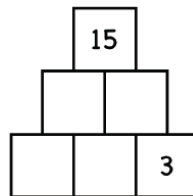
6  
♠

## Sum Pyramids 3



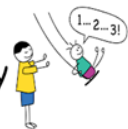
In a **Sum Pyramid**, each number is the sum of the two numbers below it.

**THE CHALLENGE:** Use the numbers from 1 to 15, at most once, to complete this Sum Pyramid.



♥  
9


Puzzle – 6 Spades



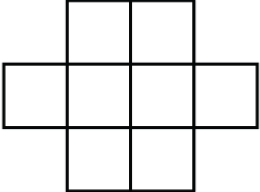
## Hints:



The two numbers 1 and 8 are different from the rest for this puzzle – why?

What are the best places for 1 and 8 to go?

**7**  
 **Consecutive Numbers 2**

**THE CHALLENGE:** Place the numbers from 1 to 8 so the boxes for consecutive numbers do not share a side or touch diagonally.



1 2 3 4 5 6 7 8   


## Puzzle – 7 Clubs

## Hints:

Which side of this equation is the best at narrowing the search?

There are three solutions. Can you find them all?

Is there a solution only using the numbers from 1 to 5?

7  
♦

## Fill in the Blanks 1

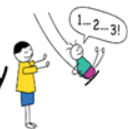
**THE CHALLENGE:** Use the numbers from 1 to 6 at most once to fill in these blanks. How many solutions can you find?

$$\square + \square = \square - \square$$

1 2 3 4 5 6



## Puzzle – 7 Diamonds



## Hints:

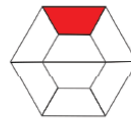
For the left figure, what shape can you make by putting two of the red triangles together?

For the right figure, don't try to do it all at once. Start with putting the red shape in the upper left corner. There is only way to put it there that leads to a solution.

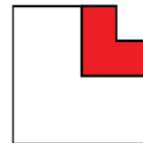
7  
♥

## Finding the Pieces 4

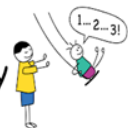
The white part of this figure is broken into 7 parts like the red one.



**THE CHALLENGE:** Count how many times the red figure fits into the unshaded figure for each of these.



## Puzzle – 7 Hearts



## Hints:

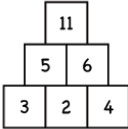
There are only four possibilities for the bottom left corner – 1 and 5, 5 and 1, 2 and 4, and 4 and 2.

Recall from the 5 of Spades puzzle – the top number is the sum of the two bottom corners plus three times the sum of the two middle bottom numbers.

There are three solutions.

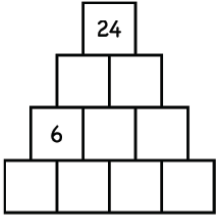
7  
♠

### Sum Pyramids 4



In a *Sum Pyramid*, each number is the sum of the two numbers below it.

**THE CHALLENGE:** Use the numbers from 1 to 24, at most once, to complete this Sum Pyramid.




♠

## Puzzle – 7 Spades

## Hints:

$25 = 12 + 13$  is the sum of the left 2 by 2 and the right 2 by 2. This involves the sum of all the numbers 1 to 6 (21), plus the two middle numbers an extra time. The two middle numbers must add up to 4.


There are eight solutions which are essentially the same – each pair in a column can be flipped without changing the rest of the puzzle.

 **Sujiko Puzzle 1**

**THE CHALLENGE:** Use the numbers from 1 to 6 in the six squares. Each circled number must be the sum of the four squares surrounding it.

	12	13			

1 2 3 4 5 6



## Puzzle – 8 Clubs



## Hints:

As in the 7 of Diamonds puzzle, which part of this is the best at narrowing the search?

What goes wrong if the difference on the right side is six or smaller?

8  
♦

## Fill in the Blanks 2

**THE CHALLENGE:** Use the numbers from 1 to 8 at most once to fill in these blanks. How many solutions can you find?

$$\square + \square = \square + \square = \square - \square$$

1 2 3 4 5 6 7 8

♦  
8

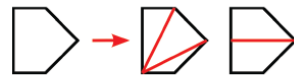
## Puzzle – 8 Diamonds

## Hints:

The figure on the left can be broken into three triangles or three trapezoids. The figure on the right can be broken into four triangles or three trapezoids.



## Finding the Pieces 5

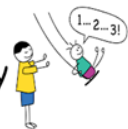


A **trapezoid** has one pair of parallel sides. The figure above is broken into as few triangles and trapezoids as possible.

**THE CHALLENGE:** Do the same for these two figures.



## Puzzle – 8 Hearts



## Hints:

The top row must be 1 and 2.

The 1 cannot go in the column that adds up to 9.

8  
♠

### Square Sums 1

**THE CHALLENGE:** Fill in the four missing numbers with numbers from 1 to 7 so the rows and columns add up to the numbers on the outside of the 2 by 2 square.

		3
		12
9	6	+

♥  
8

## Puzzle – 8 Spades

## Hints:

For the upper right 2 by 2 to add up to 17, the central square must be 3.

With the 3 in the center, for the lower right 2 by 2 to add up to 22, the two bottom right squares must be 6 and 9.

9  
♣

## Sujiko Puzzle 2

**THE CHALLENGE:** Use the numbers from 1 to 9 in the nine squares. Each circled number must be the sum of the four squares surrounding it.

		2	8
13		17	
			4
18		22	

1 3 5 6 7 9

♣  
6

## Puzzle – 9 Clubs

## Hints:

The smallest the right hand sum can be is 6.

$6 = 1 + 2 + 3$  cannot work with the middle sum.

$7 = 1 + 2 + 4$  cannot work with the middle sum.

$8 = 1 + 2 + 5$  cannot work with the middle sum.

There are a total of four solutions.

9



## Fill in the Blanks 3

**THE CHALLENGE:** Use the numbers from 1 to 9 at most once to fill in these blanks. How many solutions can you find?

$$\square = \square + \square = \square + \square + \square$$

1 2 3 4 5 6 7 8 9



6

## Puzzle – 9 Diamonds

## Hints:

C + 8 cannot be more than 9.

F + F must be 14.

9  
♥

## Letter Substitutions 1

In *Letter Substitution Puzzles*, each letter is a digit from 0 to 9, different letters have different values, and no number has 0 as its leftmost digit.

**THE CHALLENGE:** Find the value of C, D, E, F, and G in these puzzles.

$$\begin{array}{r} C \\ + 8 \\ \hline D \end{array}$$

$$\begin{array}{r} E \\ + E \\ \hline 8 \end{array}$$

$$\begin{array}{r} F \\ + F \\ \hline G4 \end{array}$$

♥  
6

## Puzzle – 9 Hearts

## Hints:

Going from the Start to the 3 does not work.

Is there more than one solution?

9  
♠

## Treasure Map 1

**THE CHALLENGE:** When standing on a square, move the given number of squares, and only move to the right, left, up, or down. Find a route from the red Start square to the \$\$.

Start

1	3	2	1
2	1	2	2
1	2	2	3
1	3	1	\$\$

♠  
6

## Puzzle – 9 Spades

## Hints:

For the first expression, the target value is 6, which is less than 10, and we do not need to use negative numbers.

For the second expression, one way to get 6 is to multiply 1 times 2 times 3.

10



## Parentheses 1

Where you put parentheses can change the value of an expression. For example,  $5 - 3 + 1$  can become  $5 - (3 + 1) = 1$  or  $(5 - 3) + 1 = 3$ .

**THE CHALLENGE:** Find places to put parentheses in these two expressions to make each one have the value 6.

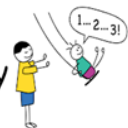
$$10 - 3 - 5 - 2 + 8 - 4$$

$$7 - 4 \times 8 - 3 + 4 \times 2$$



01

## Puzzle – 10 Clubs





## Hints:

Decide which numbers go in the ones column and which in the tens column. The pairings to create the 2-digit numbers do not matter.

The carry from the ones column will either be 0 or 1.

The numbers 1 to 6 add up to 21. If the tens column adds up to 9 or 10, the ones column will add up to 12 or 11 (respectively).

**10**  
♦

**Fill in the Blanks 6**

**THE CHALLENGE:** Using the numbers 1 to 6 once each, make this sum as close to 100 as you can.

$$\begin{array}{r} \square \square \\ \square \square \\ + \square \square \\ \hline \end{array}$$

1 2 3 4 5 6 ♦

**01**

## Puzzle – 10 Diamonds

## Hints:

In both puzzles, the carry into the tens place must be 1.

10  
♥

## Letter Substitutions 2

In *Letter Substitution Puzzles*, each letter is a digit from 0 to 9, different letters have different values, and no number has 0 as its leftmost digit.

**THE CHALLENGE:** Find the value of C, D, E, F, G, and H in these puzzles.

$$\begin{array}{r} C \\ + 2 \\ \hline D E \end{array}$$

$$\begin{array}{r} F \\ + G \\ \hline F H \end{array}$$

♥  
01

## Puzzle – 10 Hearts

## Hints:

Sometimes, going backward from the answer works better than going forward from the start. There is only one square that can go to the \$\$ directly.

The 1 in the middle of the bottom row is the only square that goes directly to the \$\$\$. There is only one square that can get to that 1, and there is only one square that can get to that square.

10  
♠

## Treasure Map 2

**THE CHALLENGE:** When standing on a square, move the given number of squares, and only move to the right, left, up, or down. Find a route from the red Start square to the \$\$.

Start

3	1	2	1
2	3	2	3
3	1	2	3
1	3	1	\$\$

♠  
01

## Puzzle – 10 Spades

## Hints:

Compare the top row with the diagonal starting in the upper left.  $8 + 1 +$  (top right corner) is equal to  $8 + 2 +$  (middle). So the middle must be one less than the top right corner.



## Magic Squares 1

In *Magic Squares*, all rows, columns, and diagonals add up to the same number.

**THE CHALLENGE:** Use the numbers 3, 5, 6, and 9 once each to complete this Magic Square.

8	1	
		7
4		2



## Puzzle – J Clubs

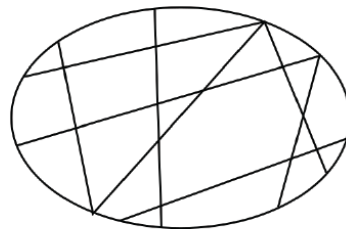
## Hints:

Don't jump around the diagram. Start at one region and work from there.

## J ♦ Map Coloring With 2 Colors 1

Map makers color maps so regions sharing a border use different colors.

**THE CHALLENGE:** Color this map using just two colors.



## Puzzle – J Diamonds

## Hints:

In the leftmost puzzle, the carry is either 1 or 2. In the rightmost puzzle, the carry is 0.



## Letter Substitutions 3

In *Letter Substitution Puzzles*, each letter is a digit from 0 to 9, different letters have different values, and no number has 0 as its leftmost digit.

**THE CHALLENGE:** Find the value of A, B, C, and D in these puzzles.

$$\begin{array}{r} A \\ A \\ + 6 \\ \hline B B \end{array} \qquad \begin{array}{r} C \\ C \\ + 6 \\ \hline D \end{array}$$



## Puzzle – J Hearts

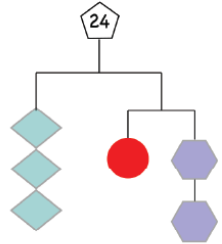
## Hints:

The two sides under the 24 are evenly balanced, so each side is 12.

**J**  
♠

### Balance Beam 1

The weight is the same on each side of a **balance beam**. The total weight is given in the top shape. The weight for a given shape is always the same.



**THE CHALLENGE:**  
Find the weight of each type of shape in this figure.

♠  
J

## Puzzle – J Spades

## Hints:

The three rows will involve all the numbers from 1 to 9, so they will add up to 45. The three rows have the same sum, so the common sum must be 15.



## Magic Squares 2

In *Magic Squares*, all rows, columns, and diagonals add up to the same number.

**THE CHALLENGE:** Use the numbers 1, 2, 4, 7 and 8 once each to complete this Magic Square.

	9	
	5	3
6		



## Puzzle – Q Clubs

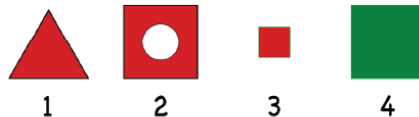


## Hints:

There are shapes, sizes, and colors to use in your descriptions.

**Q** Each of These  
is not  
**◆** Like the Others

**THE CHALLENGE:** For each of these four objects, describe a property that the remaining three objects have that it does not.



Puzzle – Q Diamonds

## Hints:

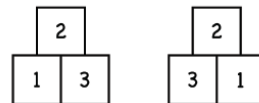
The 6 cannot be the difference of any of these numbers, so it must be in the bottom row.

The 5 is either above the 1 and 6, or it is in the bottom row.

Can you find more than one solution?



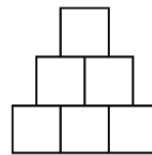
## Difference Pyramids 1



In a **Difference Pyramid**, each number is the difference of the two numbers below it.

### THE CHALLENGE:

Use the numbers from 1 to 6 once to make a Difference Pyramid.



## Puzzle – Q Hearts



## Hints:

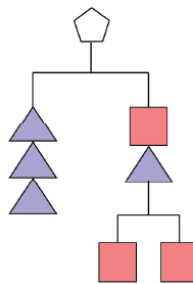
The squares on the left side add up to 6.

The sum of 6 plus the triangle on the right balances with the three triangles on the left.



## Balance Beam 2

The weight is the same on each side of a **balance beam**. The total weight is given in the top shape. The weight for a given shape is always the same.



### THE CHALLENGE:

If squares each have weight 2, find the weight of each triangle and the total weight.



## Puzzle – Q Spades

## Hints:

The three rows will involve all the numbers from 0 to 8, so they will add up to 36. The three rows have the same sum, so the common sum must be 12.

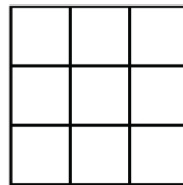
There are four lines that go through the center. If you add up the four lines, that will be four 12's which is 48. Those four lines contain all the numbers 0 to 8 once, plus the center square three extra times. The numbers from 0 to 8 add up to 36. So,  $48 = 36 + 3$  (center). So the center square is 4.

K  
♣

## Magic Squares 3

In *Magic Squares*, all rows, columns, and diagonals add up to the same number.

**THE CHALLENGE:** Use the numbers 0 to 8 once each to complete a Magic Square. Is there more than one way?



♣  
K

Puzzle – K Clubs

## Hints:

A tempting first stab is to put five X's along the top row and the left side. However, it is possible to put six X's in this grid.

If there are three X's in any row or column, you won't be able to put more than a total of five X's.

**K**  
♦

## Avoiding Rectangles 1

X	X	X
X		
X	X	

X		
	X	
	X	X
	X	

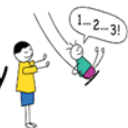
The X's in the left grid form two rectangles. The X's in the right grid avoid forming any rectangles.

### THE CHALLENGE:

Place as many X's as you can in this 3 by 3 grid avoiding creating any rectangles.


♦  
**K**

## Puzzle – K Diamonds



## Hints:

The 10 cannot be the difference of any of these numbers, so it must be in the bottom row.

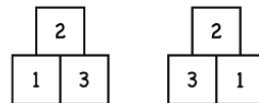
The 9 is either above the 1 and 10, or it is in the bottom row.

Looking where 7 and 8 will go helps a lot. Though not obvious, it turns out that 8 must be in the bottom row.

Can you find more than one solution?

K  
♥

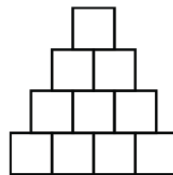
## Difference Pyramids 2



In a **Difference Pyramid**, each number is the difference of the two numbers below it.

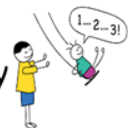
### THE CHALLENGE:

Use the numbers from 1 to 10 once to make a Difference Pyramid.



♥  
K

Puzzle – K Hearts



## Hints:

Be organized! There are five possibilities for placing the numbers 1 to 4: (1 2 4) - (3); (1 2) - (3 4); (1 3) - (2 4); (1 4) - (2 3); and (1) - (2 3 4).

Is there more than one best solution?

# K



## Ladybugs Don't Add Up 1

Ladybugs with numbers land on two leaves. No two ladybugs on a leaf can add up to another on that leaf. The left leaf is OK; the right has  $2+4=6$ .



**THE CHALLENGE:** Starting at 1, how high can you safely go putting ladybugs on two leaves?



# K

## Puzzle – K Spades

# Joker

Why did the two 4's skip lunch? ...  
*because they already 8.*

Why did 2 and 0 break up? ...  
*because some one came between them.*

Joker



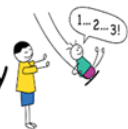


# Joker

What did 0 say to the 8? ...  
*nice belt!*

Why are obtuse angles so depressed? ...  
*because they're never right.*

Joker



## Grades K-3 Math Puzzles

These puzzles are for grades K to 3, and can be enjoyed by children of all ages. They get harder as the rank increases. Get solutions, notes, card images, and detailed versions of each puzzle at this link.



[www.EarlyFamilyMath.org/Deck-K-3](http://www.EarlyFamilyMath.org/Deck-K-3)

