



# Ideas

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The *Ideas* this month provide practice for addition, subtraction, multiplication, and division of rational numbers.

## IDEAS For Teachers

Levels: 1, 2

### PLAYING THE TRIANGLE

#### Objective

To practise basic addition and subtraction facts.

#### Directions

Review the geometric concept of a triangle. Let the children find examples of triangular shapes in the classroom. Ask the following questions: Have you ever seen someone play a triangle in a band? What does it look like? What does it sound like? Then tell the children that they are going to "play" some "math triangles." Explain that math triangles are numbers that fit together in a special way in the shape of a triangle. Distribute the worksheets. Show the children how to find each number by adding the two numbers in the boxes underneath the number.

For example:

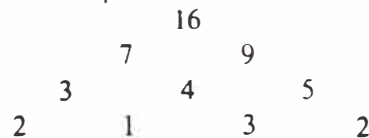


Do triangle A with the children. Have them do B and C. Then ask the children how they could fill in the box between 1 and 3 in triangle D (by subtracting 3 from 6). Have the children finish filling in the rest of the triangles.

#### Extensions

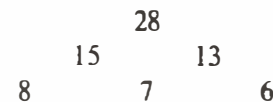
1. Have the children make up some math triangles with four "floors."

For example:



2. Make up some triangles using larger numbers.

For example:

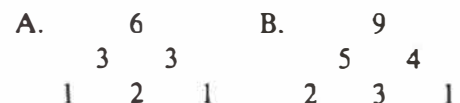


3. Have the students investigate the question: Does the order of the numbers on the bottom floor change the number on the top floor?

For example:

Try math triangles with these numbers on the bottom floor: 1, 2, 3; 3, 2, 1; and 1, 3, 2.

Answers



C.     9           D.     10  
       4   5           4   6  
      3   1   4       1   3   3

E.     9           F.     7  
       5   4           3   4  
      3   2   2       1   2   2

**IDEAS For Teachers**

Levels: 3, 4

**TRYING TRIANGLES**

*Objective*

To practise adding and subtracting with one-digit and two-digit numbers.

*Directions*

Ask the students to fill in the rest of the boxes in each triangular array. To find each number they must add the two numbers in the boxes right underneath the number.

For example:



Have them do the second "floor" in triangle A. Check their results to see that they have the right idea. Then ask the students how they can find the number when one of the boxes underneath the number is empty.

For example:



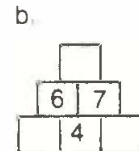
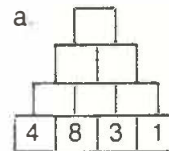
Have the students complete the rest of the triangles.

*Extensions*

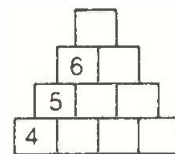
1. Have the students make up their own triangles for their friends to try. Have them design both types: (a) those with all the numbers on

the bottom floor given, and (b) those where the given numbers are scattered.

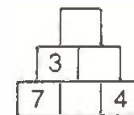
For example:



2. Have students investigate the question: How many squares do you need to have filled in to complete a particular triangular array? For example, would everyone get the same array of numbers if they completed the following triangle?



3. Have students investigate the question: Could you make partially completed triangular arrays that would be impossible to complete? For example, could you complete the following triangle? (Note that this opens the discussion to the idea of negative numbers.)



*Answers*

(With many of the triangles, checking the top number only would be adequate.)

A.                   36  
                   19    17  
               10    9    8  
           4    6    3    5

B.                   128  
                   58    70  
               24    34    36  
           9    15    19    17  
          2    7    8    11    6

C.

		60		
		30	30	
	16		14	16
	10	6	8	8
7	3	3	5	3

D.

		203		
		90	113	
	23	67	46	

### IDEAS For Teachers

Levels: 4, 5

#### PYRAMID POWER

##### Objective

To practise multiplication and division.

##### Directions

Review the geometric concept of a pyramid, and the fact that on each face of a pyramid there is a triangle. Distribute the worksheets. Explain that to find each number on the face of the pyramid, they must multiply the two numbers in the boxes right underneath the number.

For example:



Ask the students how they can find the missing number when one of the boxes underneath the number is empty.

For example:



Have the students complete the rest of the pyramid faces.

##### Extension

Have students make up their own pyramids for their friends to try.

### Answers

(With many of the pyramids, checking the top number only would be adequate.)

A.

			0		
			0	0	
		32	0	0	
	8	4	0	0	
2	4	1	0	8	

B.

			3436		
		48		72	
	4		12	6	
1	4		3	2	

C.

			48000		
		240		200	
	12		20	10	
3	4		5	2	

D.

			1452		
		33		44	
	3		11	4	

### IDEAS For Teachers

Levels: 7, 8

#### MORE (PYRAMID) POWER TO YOU

##### Objective

To practise adding and subtracting decimals and common fractions.

##### Directions

Explain to the students how the boxes in the pyramid faces are to be filled in. To find each number, they must add the two numbers in the boxes right underneath the number.

For example:



Ask students how they can find the missing number when one of the boxes underneath is empty.

For example:



$$8 - 4.1 = 3.9$$

Have the students fill in the rest of the numbers.

*Extensions*

1. Use the same worksheet, but have students multiply (or divide) to get the missing numbers. That is, each number is obtained by multiplying the numbers in the boxes underneath the number.
2. Have students make up their own pyramids for their friends to try.

*Answers*

A.	40.98
	23.5    17.48
	16.3   7.2   10.28
	11.3   5.0   2.2   8.08
	0.7   3.6   1.4   0.8   0.08

B.

$$\begin{array}{cccc}
 & & \frac{48}{12} & \\
 & & \frac{20}{12} & \frac{28}{12} \\
 & \frac{3}{4} & \frac{11}{12} & \frac{17}{12} \\
 \frac{1}{2} & \frac{1}{4} & \frac{2}{3} & \frac{3}{4}
 \end{array}$$

C.

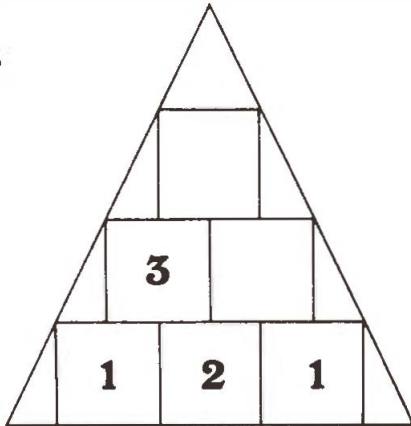
$$\begin{array}{ccc}
 & \frac{24}{8} & \\
 & \frac{13}{8} & \frac{11}{8} \\
 \frac{3}{4} & \frac{7}{8} & \frac{1}{2} \\
 \frac{1}{8} & \frac{5}{8} & \frac{2}{8} & \frac{2}{8}
 \end{array}$$

D.

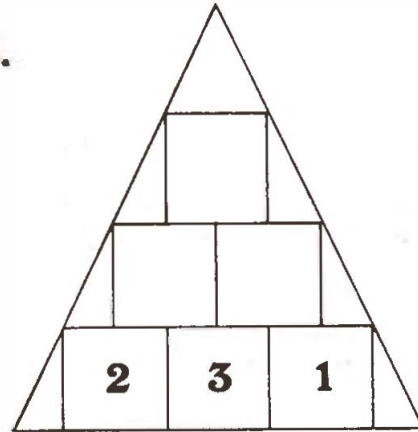
$$\begin{array}{ccc}
 & 4\frac{17}{10} & \\
 & 4\frac{3}{5} & \frac{11}{10} \\
 4 & \frac{3}{5} & \frac{1}{2}
 \end{array}$$

## Playing the Triangle

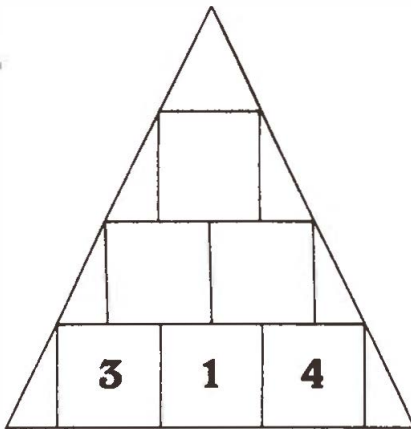
A.



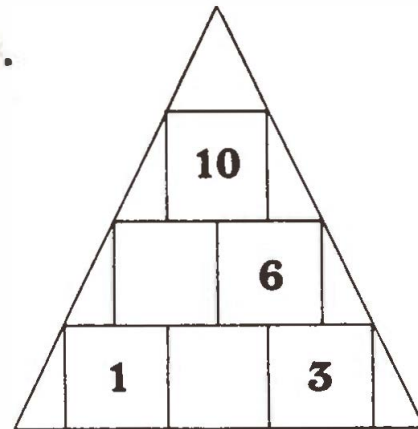
B.



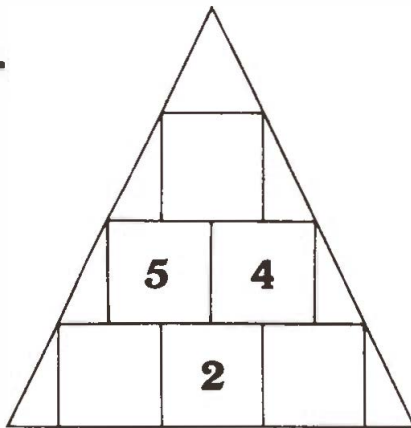
C.



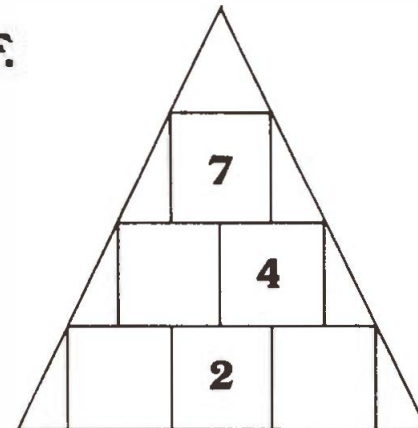
D.



E.



F.



Make some more math triangles of your own.

## Trying Triangles

**A.**

A 4-level triangle with the following numbers in the bottom row: 4, 6, 3, 5. The other levels are empty.

**B.**

A 5-level triangle with the following numbers in the bottom row: 2, 7, 8, 11, 6. The other levels are empty.

**C.**

A 5-level triangle with the following numbers: Bottom row: 10, 3, 8, 5; Second row: 16. The other levels are empty.

**D.**

A 4-level triangle with the following numbers: Bottom row: 23, 90, 46; Second row: 90. The other levels are empty.

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## Pyramid Power

**A.**

**B.**

**C.**

**D.**

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## More (Pyramid) Power to You

**A.**

**B.**

**C.**

**D.**

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