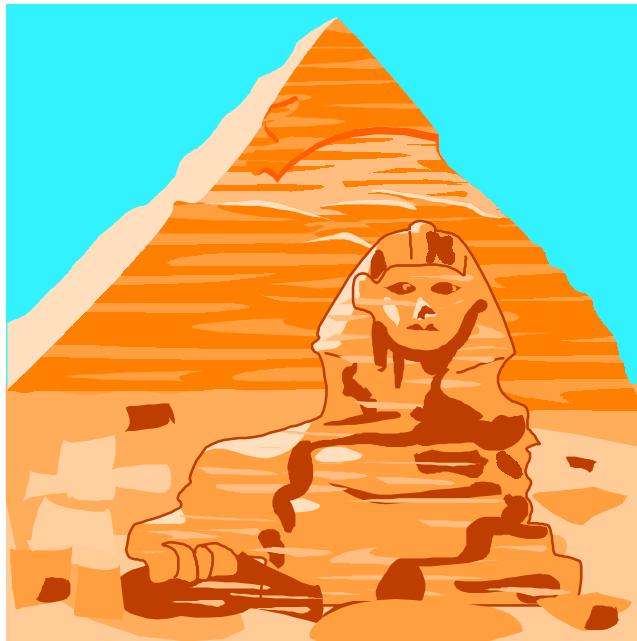


2000 Years of Mathematics

A workshop pack for use with parents and children of all ages

ANCIENT CIVILIZATIONS



ACTIVITIES

- ♦ Egyptian Multiplication
- ♦ Building Pyramids
- ♦ Triangular Teasers
- ♦ Number Pyramids
- ♦ Puzzling Pyramids 1
- ♦ Puzzling Pyramids 2
- ♦ Egyptian Numbers
- ♦ Building Triangles

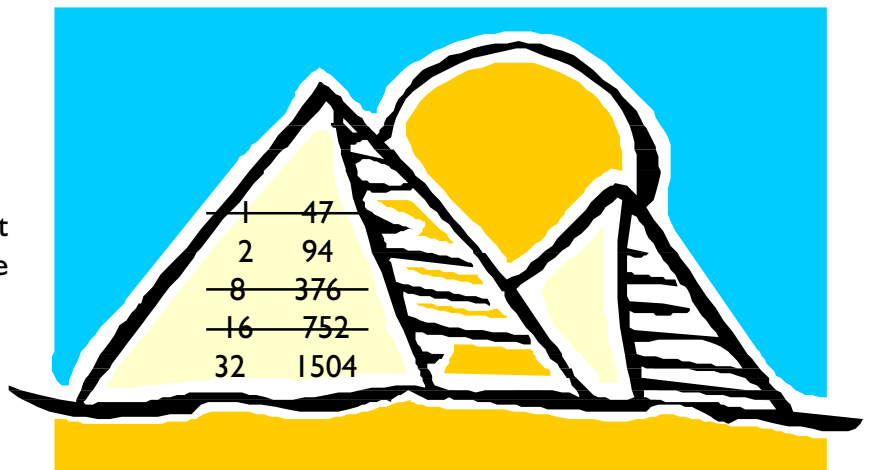
Egyptian Multiplication

Ancient Egyptians used this method to do multiplication calculations.
All you need is to be able to double and add numbers.

$$34 \times 47$$

1	47	Start by writing the number 1 on the left and the large number on the right.
2	94	Keep doubling both numbers....
4	188	until...
8	376	the number on the left...
16	752	is more than half ...
32	1504	of the smaller number.

Now find two numbers on the left which add up to 34. Cross out all the other lines.



$$32 + 2 = 34$$

To find the answer add up the numbers on the right

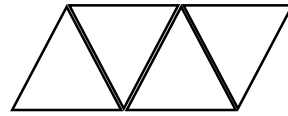
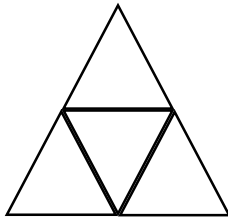
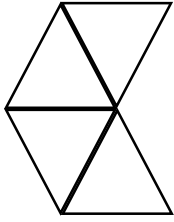
$$\begin{array}{r}
 94 \\
 1504 \\
 \hline
 1598 \\
 \hline
 \end{array}
 = 34 \times 47$$

Use Egyptian multiplication to work out these sums.

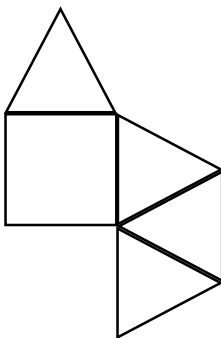
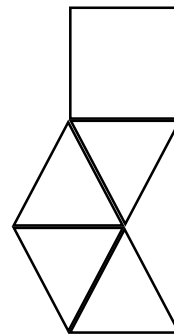
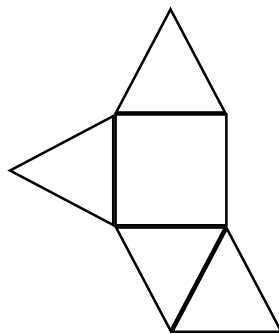
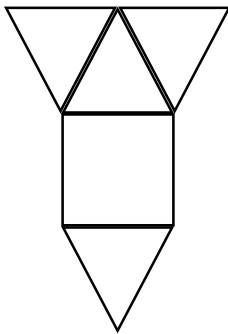
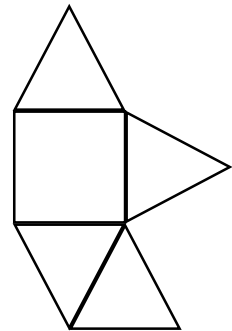
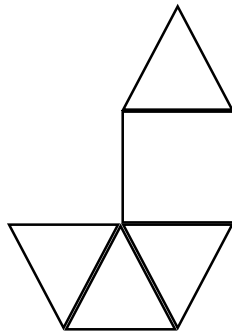
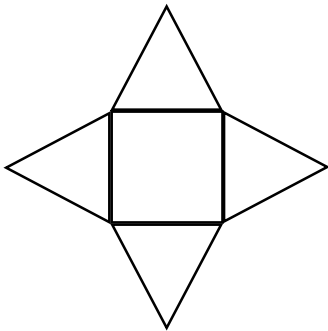
- | | |
|------------|------------|
| 1) 13 x 52 | 4) 49 x 52 |
| 2) 22 x 14 | 5) 47 x 23 |
| 3) 25 x 24 | 6) 67 x 51 |

Building Pyramids

Which of these nets would fold into a triangular based pyramid ?



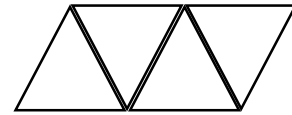
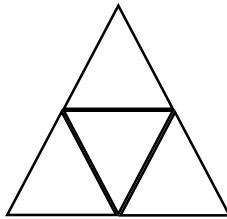
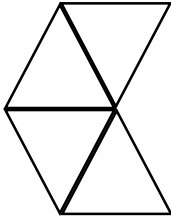
Which of these nets would fold into a square based pyramid?



* you could use polydron or clixi to help you !

Triangular Teasers

If you join 4 equilateral triangles together you can make 3 different shapes.

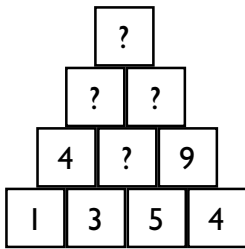


How many different shapes can you make using 5 equilateral triangles?....

using 6 equilateral triangles?

Can you work out a pattern?

Number Pyramids



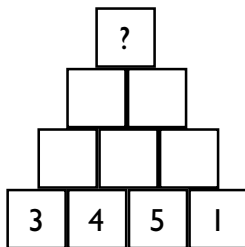
Add pairs of numbers together to make the number above

eg

4	
1	3

 $1 + 3 = 4$

Continue until you reach the top of the pyramid.



Does it make a difference to the top number if you add the numbers in a different order?

Use the blank grids below to make your own number pyramids.

Try putting larger numbers in the bottom layer.

32	54	71	45
----	----	----	----

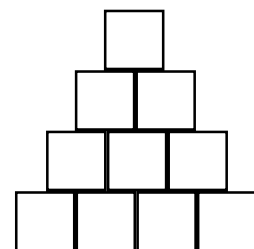
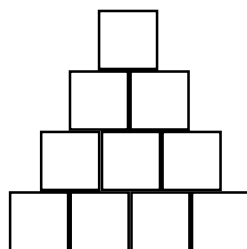
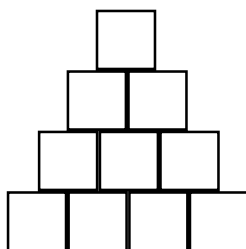
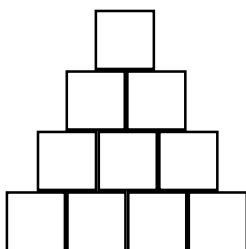
Try using fractions ...

$1\frac{1}{2}$	$2\frac{3}{4}$	$3\frac{1}{4}$	$4\frac{1}{2}$
----------------	----------------	----------------	----------------

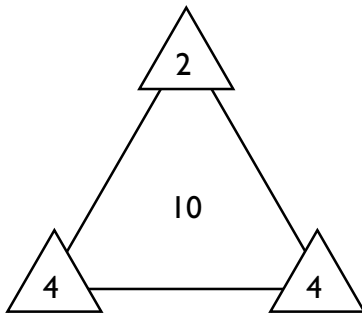
or decimals

4.5	7.6	2.9	3.1
-----	-----	-----	-----

Try larger pyramids .. start with 5 numbers .. 6 numbers

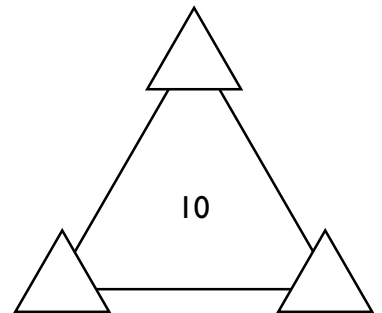
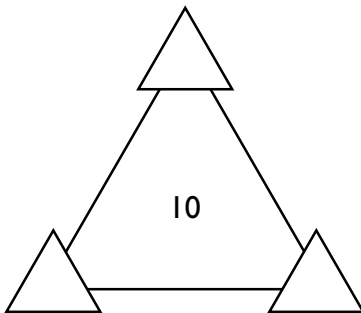
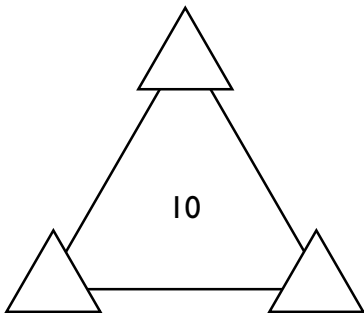
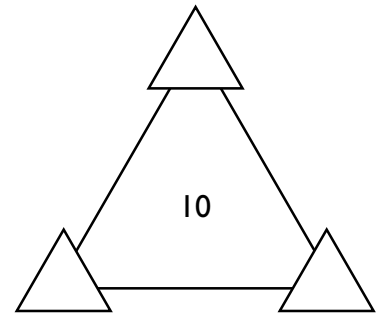
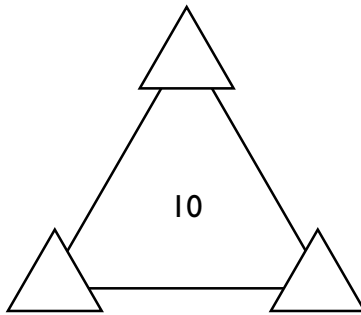
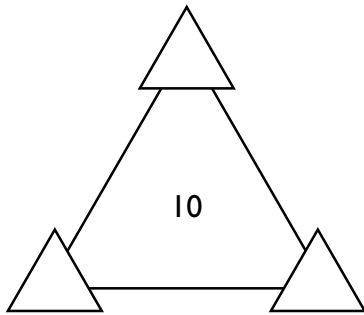


Puzzling Pyramids 1

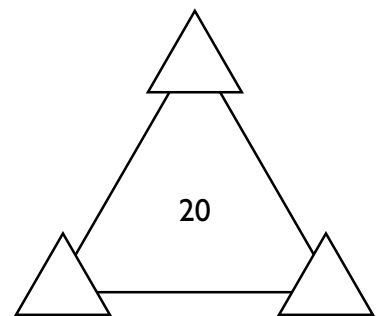
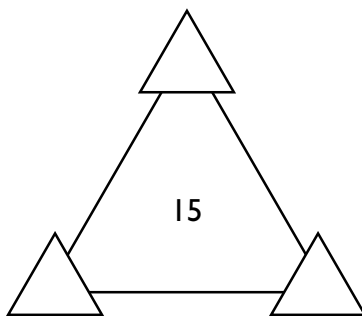
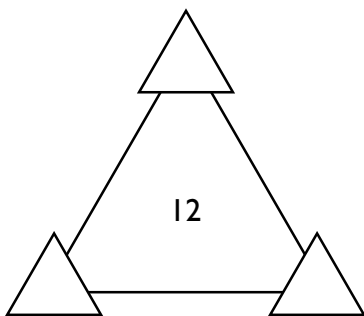


The 3 numbers at the corners of the big triangle add up to make the number in the middle.

How many ways can you make a total of 10?

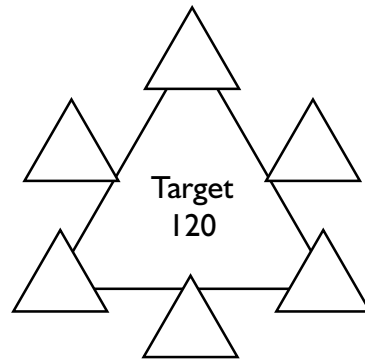
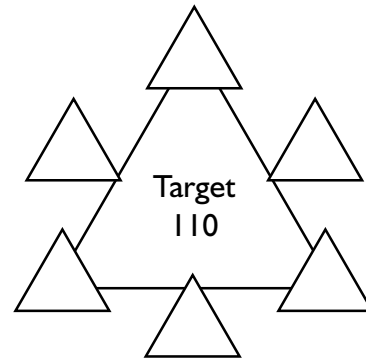
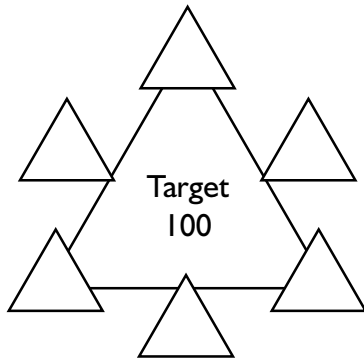
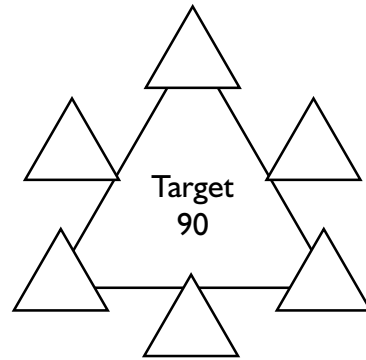
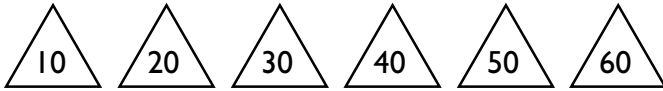


Can you find sets of numbers to make these totals?



Puzzling Pyramids 2

Can you arrange the numbers below on the triangles so that each side of the triangle adds up to the target number?



Egyptian Numbers

1	∟	10	∩	100	⊙
2	∟∟	20	∩∩	200	⊙⊙
3	∟∟∟	30	∩∩∩	300	⊙⊙⊙
4	∟∟∟∟	40	∩∩∩∩	400	⊙⊙⊙⊙
5	∟∟∟ ∟∟	50	∩∩∩ ∩∩	500	⊙⊙⊙ ⊙⊙
6	∟∟∟ ∟∟∟	60	∩∩∩ ∩∩∩	600	⊙⊙⊙ ⊙⊙⊙
7	∟∟∟∟ ∟∟∟	70	∩∩∩∩ ∩∩∩	700	⊙⊙⊙⊙ ⊙⊙⊙
8	∟∟∟∟ ∟∟∟∟	80	∩∩∩∩ ∩∩∩∩	800	⊙⊙⊙⊙ ⊙⊙⊙⊙
9	∟∟∟∟∟ ∟∟∟∟	90	∩∩∩∩∩ ∩∩∩∩	900	⊙⊙⊙⊙⊙ ⊙⊙⊙⊙⊙

Write these numbers using Egyptian symbols.

1) 3 _____

2) 7 _____

3) 12 _____

4) 69 _____

5) 23 _____

6) 97 _____

7) 34 _____

8) 48 _____

9) 71 _____

10) 56 _____

11) 85 _____

12) 154 _____

13) 222 _____

14) 378 _____

15) 543 _____

Work out these answers and write them in Egyptian symbols

16) ∩∟ + ∟∟∟ _____

17) ∩∩ + ∟∟∟∟ + ∟∟∟∟
∟∟∟ ∟∟∟∟ _____

18) ∩∩∩∩∟∟∟∟ + ∩∩∩∟∟∟
∩∩∩ ∟∟∟ ∩∩∩∟∟ _____

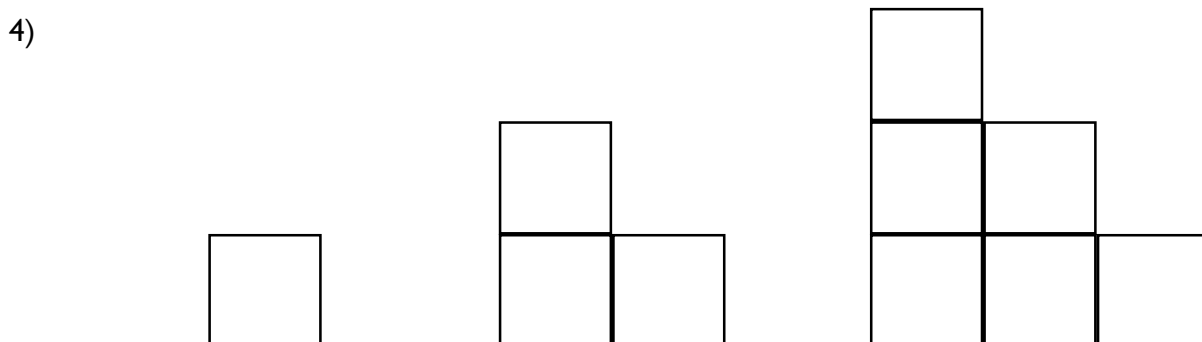
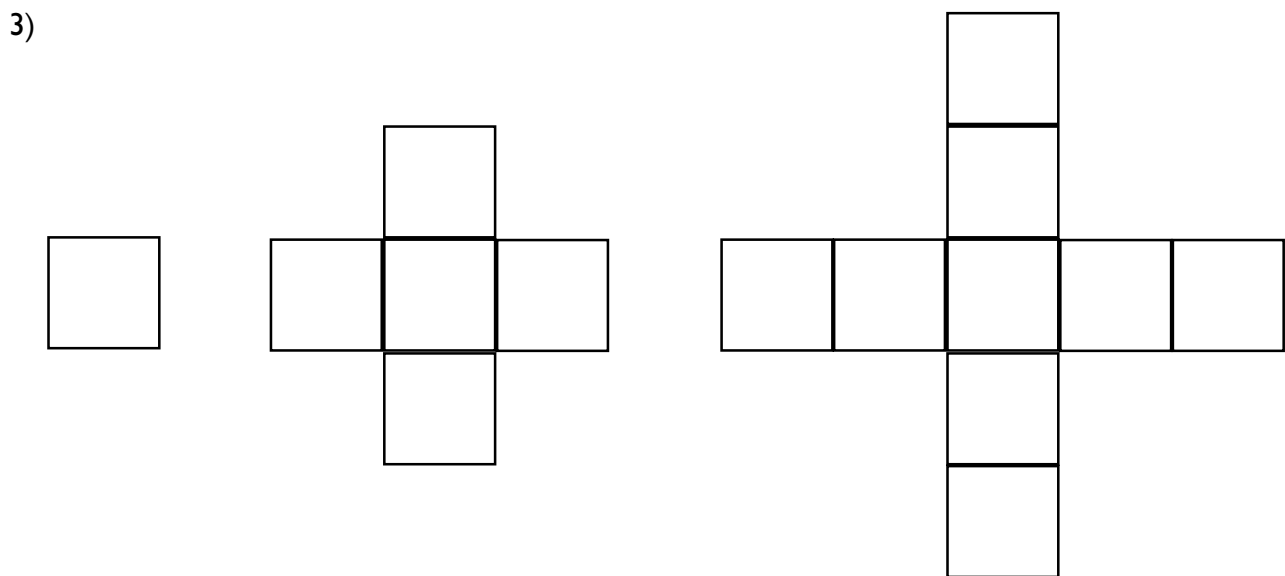
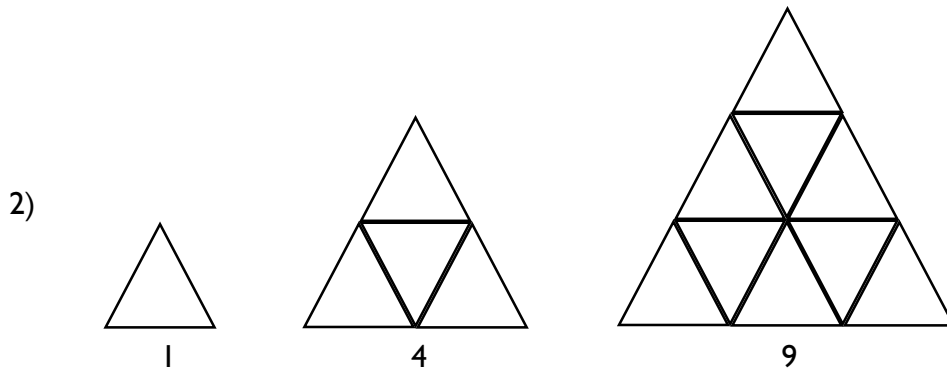
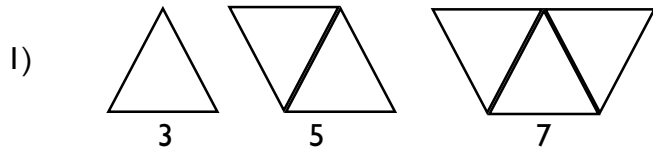
19) ∩∩∩∟∟∟ + ∩∩∩∩∟∟∟∟
∩∩ _____

20) ⊙⊙⊙ ∩∩∩∟∟∟ + ⊙⊙⊙ ∩∩∩∟
∩∩ ∟∟ ∩∩∩ _____

Make up your own Egyptian sums.

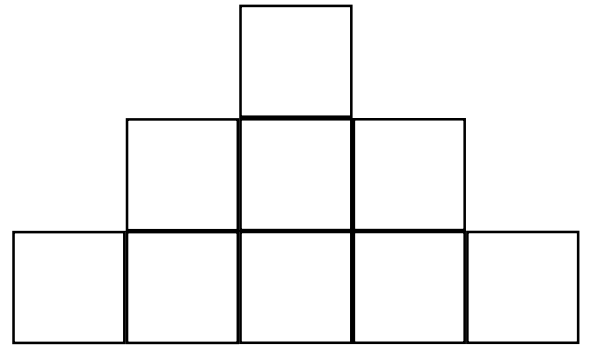
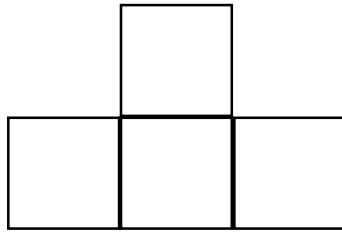
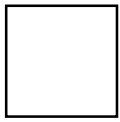
Building Triangles

Complete the next two patterns in each sequence.

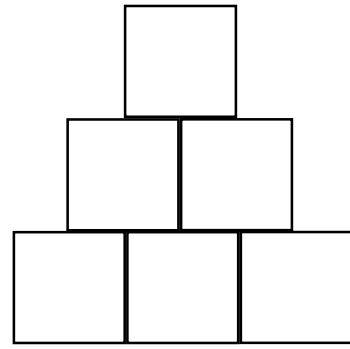
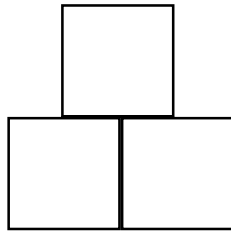
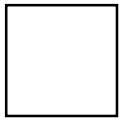


continued overleaf

5)



6)



Make up your own patterns.