

Using and Applying Mathematics: Investigating number grids:

Objectives: To spot patterns and to prove patterns using algebra and to present findings logically

Algebraic techniques used:

Collecting like terms. Expanding brackets. Solving equations

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	24	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

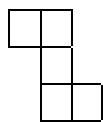
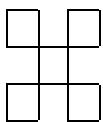
Task 1: Consider the cross above. Add together the four outside numbers. How does this compare with the number in the centre?

Task 2: Draw some of your own crosses elsewhere (of the same size). Does the same result still hold?

Task 3: What happens if you increase the size of the cross?

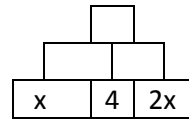
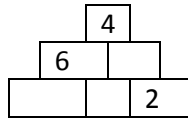
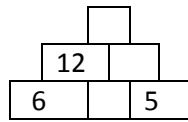
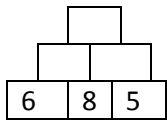
Task 4: Can you prove your findings using algebra?

Task 5: Extend to different shapes. Below are some examples:

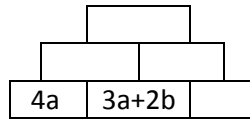
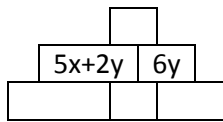
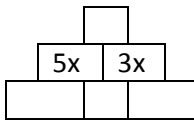


Pyramids:

Add the two lower cells to make the cell above. Fill in all the missing cells



How many pyramids can you find which satisfy the conditions below?



Invent as many pyramids as you can which obeys the following condition:

