

$$\bigcirc + \nabla = 6$$

$$\bigcirc =$$

$$\bigcirc + \nabla + \nabla = 7$$

$$\nabla =$$



# I SEE PROBLEM SOLVING - Y2

## MATHS TASKS FOR BUILDING PROBLEM-SOLVERS

Spot the Mistake:

•		•		
	•	•		2
		•	•	2
•		•	•	2
2	1	4	2	

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

A student trying to find the digits:



5:45



**SAMPLE**

Find 9 squares:



Odd one out:



# GARETH METCALFE

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# Task Family: Dots in a Grid

## Teacher Guide

The **Dots in a Grid** task family can be used as a pre-cursor to the **Digits in a Grid** task family. The **Task Build-Up** introduces the structure of the challenges, where the number of dots in each column/row is shown at the end of each column/row. This leads into **Task A**.

**Dots in a Grid** Part 1

●				1
●		●	●	3
●	●			□
	●		●	2
□	2	1	2	

3 circles in this row  
2 circles in this column

ADDITION AND SUBTRACTION | I SEE PROBLEM-SOLVING

**Task A** answers: Rows top→bottom: 4, 1, 1, 3 Columns left→right: 2, 1, 3, 3  
 Spot the Mistakes: Top-left grid: 4<sup>th</sup> row = 3 Top-right grid: 3<sup>rd</sup> column = 3  
 Bottom-left grid: 4<sup>th</sup> column = 3, 4<sup>th</sup> row = 3  
 Bottom-right grid: 4<sup>th</sup> column = 3, 3<sup>rd</sup> row = 2

**Task B** is completed practically by placing counters in the grid to find different solutions. Note that it is possible to position the counters so the rows are correct but the columns are incorrect. Draw out examples where children could move one counter to make a grid correct.

Example answer:

●	●		●	3
	●			1
	●	●	●	3
		●	●	2
1	3	2	3	

The **Task Build-Up Part 2 and Part 3** follow the same structure but with dice rather than single dots. Use **Task C** to check understanding. **Task D** can be completed using dice or by putting more than one counter in some of the squares. **Task E** is a similar challenge on a larger grid. In **Task F**, children design their own puzzle.

**Dots in a Grid** Part 2

□		□		8
	□			3
□		□	□	□
□				2
□	3	9	1	

8 dots in this row  
9 dots in this column

ADDITION AND SUBTRACTION | I SEE PROBLEM-SOLVING

**Task C** answers: Rows top→bottom: 9, 0, 6, 5 Columns left→right: 3, 5, 10, 2  
 Rows top→bottom: 2, 10, 9, 5 Columns left→right: 7, 8, 3, 8

**Task D** example: **Task D** extend:

□		□	7
□			1
	□		4
5	4	3	

		□	□	3
□	□			9
	□			4
			□	3
6	7	2	4	

	□	□		5
□			□	3
□			□	8
		□		4
4	3	6	7	

**Task E** example:

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

[Click here to download the I See Problem-Solving – Y2, Task Build-Up.](#)

# Dots in a Grid

# Task A

How many dots in each column and row?

Fill the gaps.

●	●	●	●	<input type="text"/>
		●		<input type="text"/>
			●	<input type="text"/>
●		●	●	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	

Spot the Mistakes:

●		●		2
	●	●		2
		●	●	2
●		●	●	2
2	1	4	2	

●		●		2
	●	●		2
●			●	2
	●	●	●	3
2	2	2	2	

		●	●	2
		●		1
●	●	●	●	4
●	●		●	2
2	2	3	2	

●		●	●	3
	●	●	●	3
●		●		3
	●		●	2
2	2	3	2	

# Dots in a Grid

# Task A

How many dots in each column and row?

Fill the gaps.

●	●	●	●	<input type="text"/>
		●		<input type="text"/>
			●	<input type="text"/>
●		●	●	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	

Spot the Mistakes:

●		●		2
	●	●		2
		●	●	2
●		●	●	2
2	1	4	2	

●		●		2
	●	●		2
●			●	2
	●	●	●	3
2	2	2	2	

		●	●	2
		●		1
●	●	●	●	4
●	●		●	2
2	2	3	2	

●		●	●	3
	●	●	●	3
●		●		3
	●		●	2
2	2	3	2	

# Dots in a Grid

# Task B

Put the correct number of counters in each column and row. *Do in two different ways.*

				3
				1
				3
				2
1	3	2	3	

Drawings of answers:

●	●		●	3
	●			1
	●	●	●	3
		●	●	2
1	3	2	3	

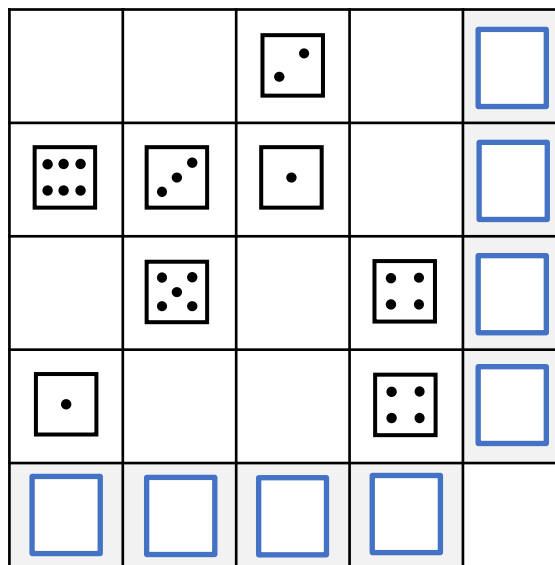
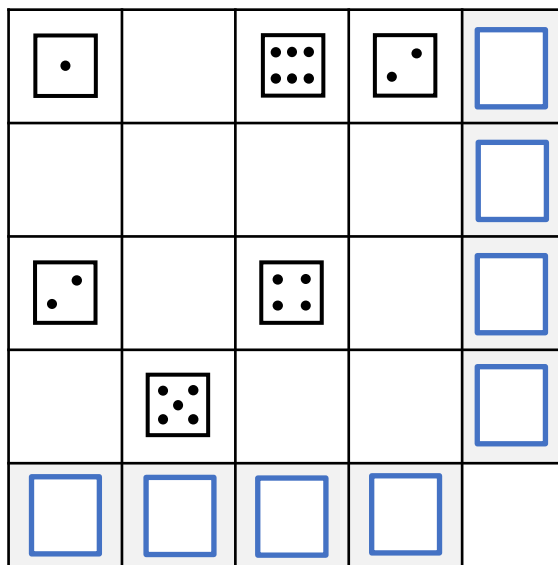
				3
				1
				3
				2
1	3	2	3	

# Dots in a Grid

# Task C

How many dots in each column and row?

Fill the gaps.

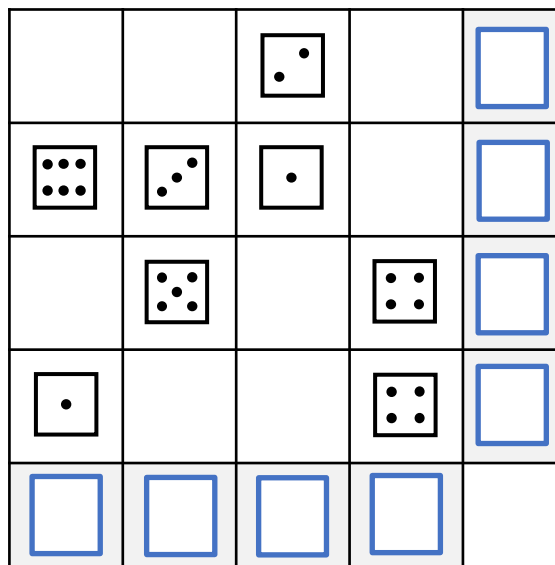
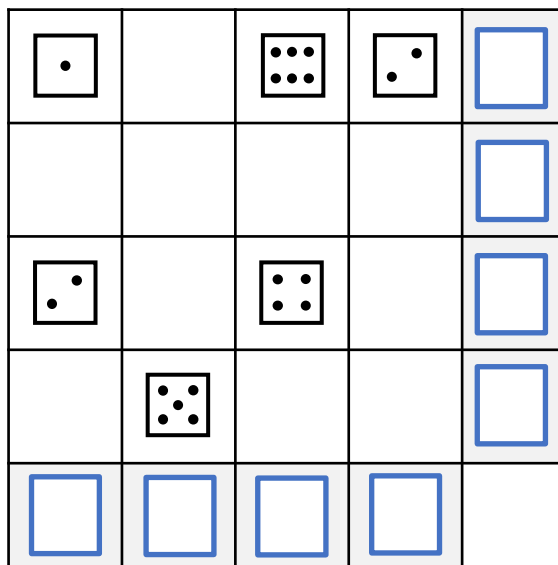


# Dots in a Grid

# Task C

How many dots in each column and row?

Fill the gaps.



# Dots in a Grid

# Task D

Complete using dice or counters.

**Have the correct number of dots in each column and row.**

*Do in two different ways.*

			7
			1
			4
5	4	3	

**Drawings of answers:**

			7
			1
			4
5	4	3	

			7
			1
			4
5	4	3	

**Extend:** Draw the missing dice on the grids.

				3
				9
				4
				3
6	7	2	4	

				5
				3
				8
				4
4	3	6	7	

# Dots in a Grid

# Task E

Complete using dice or counters.

**Have the correct number of dots in each column and row.**

*Do in two different ways.*

				5
				3
				5
				1
6	4	2	2	

**Drawings of answers:**

				5
				3
				5
				1
6	4	2	2	

				5
				3
				5
				1
6	4	2	2	

# Dots in a Grid

# Task F

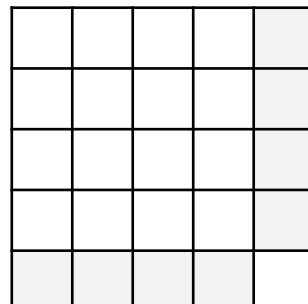
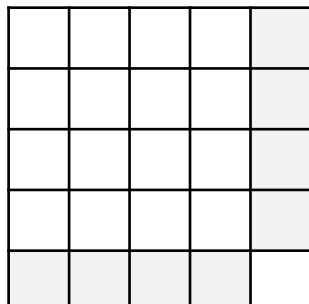
Design your own task.

**Have the correct number of dots in each column and row.**

*Do in two different ways.*

				□
				□
				□
				□
□	□	□	□	

**Drawings of answers:**





# Task Family: Change

## Teacher Guide

For the **Change** task family, children calculate the change given in coins when buying toys. For the **Task Build-Up Part 1** and **Task A**, children calculate whether the person has enough money or whether they would be given change. Bar models can be used to represent the calculations.

**Task A** answers: Tom can buy, no change. Jo can buy, gets change. Sam needs more money (even though he has more coins).

For the **Task Build-Up Part 2** and **Task B**, children calculate either how much more money is needed or how much change is given. This can be represented with bar models for each example.

**Task B** answers: Joy needs 5p more. Raja 5p change. Zara 20p change.

The calculations for the remaining tasks only involve finding change. For **Task C**, children draw in the missing coins either for the amount paid or the change given. There are different possible answers.

**Task C** example answers: 2p coin 50p & 20p coins 10p & 5p coins

The challenge increases for the **Task Build-Up Part 3**, **Task D** and **Task E** as the questions specify the number of coins paid with and given as change. For some questions, there are different possible answers. **To extend, children work out which of these questions can be answered in different ways.**

**Task D** answers: Change 5p × 2 Pay 50p, change 10p & 5p Pay 20p × 3, change 2p

**Task E** answers: Pay 50p & 20p, change 5p × 2 OR pay 50p × 2, ch 20p × 2 Pay 20p & 10p, change 2p, 2p, 1p OR pay 20p × 2, change 5p × 3 Pay 50p, 20p, 20p, change 2p, 2p, 1p

[Click here to download the I See Problem-Solving – Y2, Task Build-Up.](#)

**Change** **Part 1**

**Helen's money:**

Helen needs more money.  
Helen can buy. No change.  
Helen can buy. She gets change.

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**Change** **Part 2**

**Beth's money:**

Beth needs  more.  
OR  
Beth gets  change.

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**Change** **Part 3**






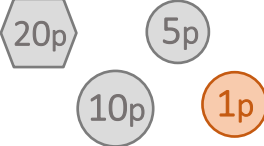
**I pay with 1 coin:**

**I get 3 coins change:**

MONEY I SEE PROBLEM-SOLVING






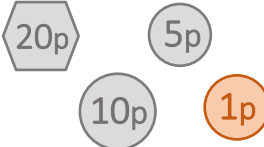
# Change

# Task A

 <p>25p</p>	<p><b>Tom's money:</b></p> 	<p>Tom needs more money. Tom can buy. No change. Tom can buy. He gets change.</p>
 <p>35p</p>	<p><b>Jo's money:</b></p> 	<p>Jo needs more money. Jo can buy. No change. Jo can buy. She gets change.</p>
 <p>40p</p>	<p><b>Sam's money:</b></p> 	<p>Sam needs more money. Sam can buy. No change. Sam can buy. He gets change.</p>







# Change

# Task A

 <p>25p</p>	<p><b>Tom's money:</b></p> 	<p>Tom needs more money. Tom can buy. No change. Tom can buy. He gets change.</p>
 <p>35p</p>	<p><b>Jo's money:</b></p> 	<p>Jo needs more money. Jo can buy. No change. Jo can buy. She gets change.</p>
 <p>40p</p>	<p><b>Sam's money:</b></p> 	<p>Sam needs more money. Sam can buy. No change. Sam can buy. He gets change.</p>


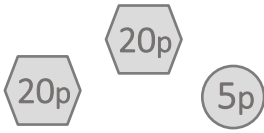




# Change

# Task B

 <p>50p</p>	<p>Joy's money:</p> 	<p>Joy needs <input type="text"/> more.</p> <p><b>OR</b></p> <p>Joy gets <input type="text"/> change.</p>
 <p>35p</p>	<p>Raja's money:</p> 	<p>Raja needs <input type="text"/> more.</p> <p><b>OR</b></p> <p>Raja gets <input type="text"/> change.</p>
 <p>80p</p>	<p>Zara's money:</p> 	<p>Zara needs <input type="text"/> more.</p> <p><b>OR</b></p> <p>Zara gets <input type="text"/> change.</p>







# Change

# Task B

 <p>50p</p>	<p>Joy's money:</p> 	<p>Joy needs <input type="text"/> more.</p> <p><b>OR</b></p> <p>Joy gets <input type="text"/> change.</p>
 <p>35p</p>	<p>Raja's money:</p> 	<p>Raja needs <input type="text"/> more.</p> <p><b>OR</b></p> <p>Raja gets <input type="text"/> change.</p>
 <p>80p</p>	<p>Zara's money:</p> 	<p>Zara needs <input type="text"/> more.</p> <p><b>OR</b></p> <p>Zara gets <input type="text"/> change.</p>







# Change

# Task C

	<p>I pay with:</p> 	<p>This is my change:</p>
	<p>I pay with:</p>	<p>This is my change:</p> 
	<p>I pay with:</p> 	<p>This is my change:</p>





# Change

# Task C

	<p>I pay with:</p> 	<p>This is my change:</p>
	<p>I pay with:</p>	<p>This is my change:</p> 
	<p>I pay with:</p> 	<p>This is my change:</p>





# Change

# Task D

 <p>80p</p>	<p>I pay with 3 coins:</p> 	<p>I get 2 coins change:</p>
 <p>35p</p>	<p>I pay with 1 coin:</p>	<p>I get 2 coins change:</p>
 <p>58p</p>	<p>I pay 3 coins:</p>	<p>I get 1 coin change:</p>




# Change

# Task D

 <p>80p</p>	<p>I pay with 3 coins:</p> 	<p>I get 2 coins change:</p>
 <p>35p</p>	<p>I pay with 1 coin:</p>	<p>I get 2 coins change:</p>
 <p>58p</p>	<p>I pay 3 coins:</p>	<p>I get 1 coin change:</p>




# Change

# Task E

 <p>60p</p>	<p>I pay with 2 coins:</p>	<p>I get 2 coins change:</p>
 <p>25p</p>	<p>I pay with 2 coins:</p>	<p>I get 3 coins change:</p>
 <p>85p</p>	<p>I pay with 3 coins:</p>	<p>I get 3 coins change:</p>

# Change

# Task E

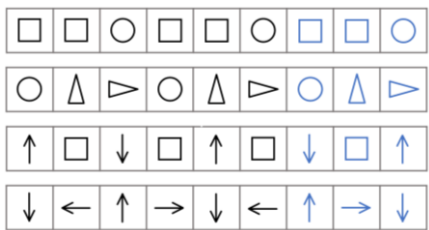
 <p>60p</p>	<p>I pay with 2 coins:</p>	<p>I get 2 coins change:</p>
 <p>25p</p>	<p>I pay with 2 coins:</p>	<p>I get 3 coins change:</p>
 <p>85p</p>	<p>I pay with 3 coins:</p>	<p>I get 3 coins change:</p>

# Task Family: Shape Patterns

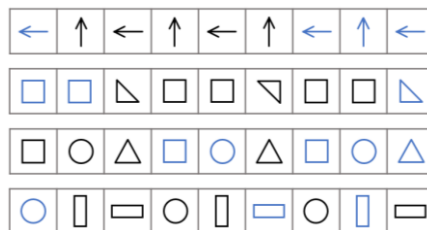
## Teacher Guide

In the **Shape Patterns** task family, children will continue patterns including visualising rotated shapes. The **Task Build-Up Part 1** introduces these skills. This prepares children for **Task A** and/or **Task B**, to complete the sequences.

### Task A answers:

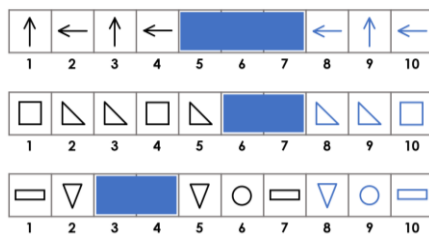


### Task B answers:



For the **Task Build-Up Part 2**, children visualise the shapes hidden behind the blue boxes or complete by reasoning, e.g. the shapes on the even numbers are circles. On **Task C**, it's best if children answer *without* drawing on the blue boxes.

### Task C answers:



For the **Task Build-Up Part 3** and **Task D**, children work out later shapes in the pattern by reasoning. For example, if the pattern has 4 shapes, the 12<sup>th</sup> shape will be the same as the 4<sup>th</sup> shape. For **Task E**, children design their own patterns to fit the 'pattern rules'.

**Task D** answers: 15<sup>th</sup> = circle, 21<sup>st</sup> = triangle

**Task E** example answer: triangle, circle, square, arrow

Shape Patterns Part 1

Continue the pattern:

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Shape Patterns Part 2

Fill in the white gaps to continue the pattern:

GEOMETRY I SEE PROBLEM-SOLVING

Shape Patterns Part 3

Here is a pattern:

What is the 10<sup>th</sup> shape in the pattern?  
What is the 17<sup>th</sup> shape in the pattern?

GEOMETRY I SEE PROBLEM-SOLVING

[Click here to download the I See Problem-Solving – Y2, Task Build-Up.](#)

# Shape Patterns

# Task A

Continue the patterns:

--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--

# Shape Patterns

# Task A

Continue the patterns:

--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--

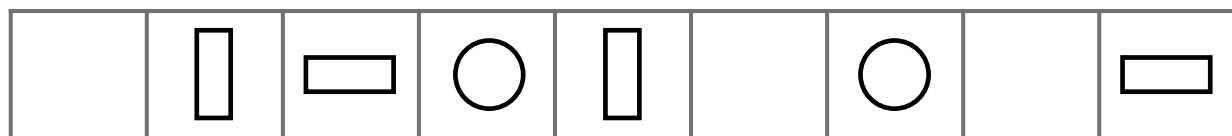
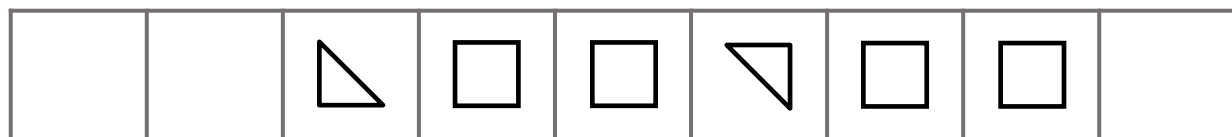
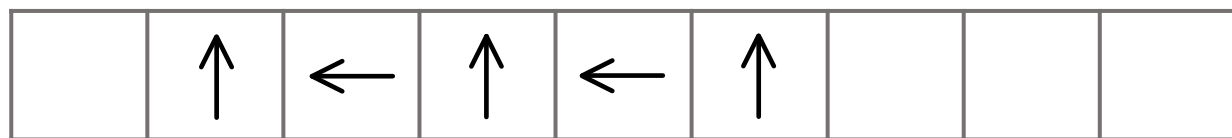
--	--	--	--	--	--	--	--	--



# Shape Patterns

## Task B

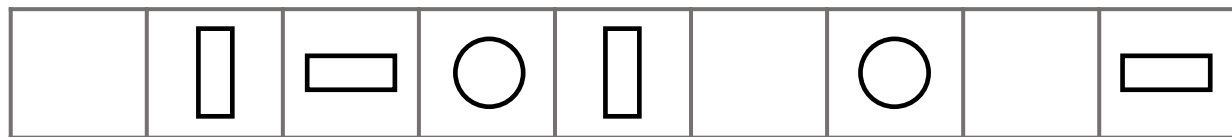
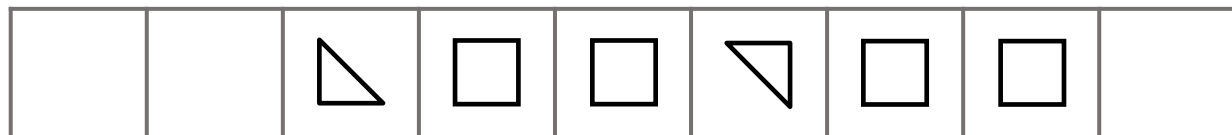
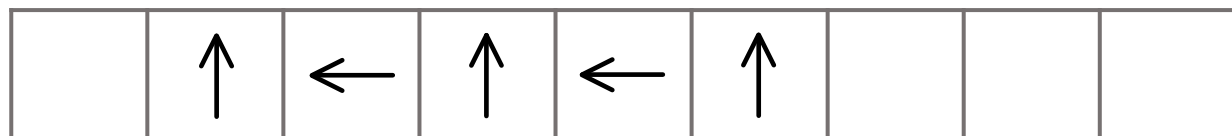
Continue the patterns:



# Shape Patterns

## Task B

Continue the patterns:













# Shape Patterns

## Task C

Fill in the white gaps to continue the pattern:

									
1	2	3	4	5	6	7	8	9	10





									
1	2	3	4	5	6	7	8	9	10






										
1	2	3	4	5	6	7	8	9	10	






# Shape Patterns

## Task C

Fill in the white gaps to continue the pattern:

									
1	2	3	4	5	6	7	8	9	10

									
1	2	3	4	5	6	7	8	9	10

										
1	2	3	4	5	6	7	8	9	10	

# Shape Patterns

## Task D

1	2	3	4	5	6	7	8	9	10

Draw the 15<sup>th</sup> shape:

The  shape is

Draw the 21<sup>st</sup> shape:

The  shape is

---

1	2	3	4	5	6	7	8

Draw the 12<sup>th</sup> shape:

The  shape is

Draw the 17<sup>th</sup> shape:

The  shape is

# Shape Patterns

## Task D

1	2	3	4	5	6	7	8	9	10

Draw the 15<sup>th</sup> shape:

The  shape is

Draw the 21<sup>st</sup> shape:

The  shape is

---

1	2	3	4	5	6	7	8

Draw the 12<sup>th</sup> shape:

The  shape is

Draw the 17<sup>th</sup> shape:

The  shape is

# Shape Patterns

## Task E

The **10<sup>th</sup> term** in your pattern is a **circle**.  
 The **15<sup>th</sup> term** in your pattern is a **square**.  
**Draw the first 4 shapes of your pattern:**

1	2	3	4

# Shape Patterns

## Task E

The **10<sup>th</sup> term** in your pattern is a **circle**.  
 The **15<sup>th</sup> term** in your pattern is a **square**.  
**Draw the first 4 shapes of your pattern:**

1	2	3	4

# Shape Patterns

## Task E

The **10<sup>th</sup> term** in your pattern is a **circle**.  
 The **15<sup>th</sup> term** in your pattern is a **square**.  
**Draw the first 4 shapes of your pattern:**

1	2	3	4

# I SEE MATHS RESOURCES

A range of resources for developing deep, visual mathematics can be found at [www.iseemaths.com](http://www.iseemaths.com)

***I See Problem-Solving*** is available here:

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[I See Problem-Solving – LKS2](#)

[I See Problem-Solving – UKS2](#)

The ***I See Reasoning*** eBooks provide a range of thought-provoking tasks and questions for embedding reasoning in daily lessons. For further information, click on the links below:

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