
Escape
Smeaton's Tower
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Escape Smeaton's Tower

As a special treat for all your hard work at school, you visit Smeaton's Tower – a lighthouse in Plymouth.

Excitedly, you climb to the top of the tower and go out of the glass doors. After a while, you hear your teacher call up from below, "Come on, it's time to leave!"

You move back round the walkway and try to open the doors. They don't budge! You start to panic.

"The doors won't open," you call down, "I'm stuck!"

Your teacher shouts back, "The guide says there's a keypad to unlock the door. He can't remember the code but thinks you'll be able to work it out!"

Solve the clues and puzzles to discover the code and escape Smeaton's Tower.

Escape Smeaton's Tower

The Rules

- You can work in small groups.
- When you find a clue, work together to solve the puzzle.
- Write your answer down on your answer sheet.
- Once you think you have found all ten digits of the code, check these with your teacher to discover if you can unlock the door and escape Smeaton's Tower.

Escape Smeaton's Tower

Answers to the Clues

Escape Smeaton's Tower – Clue 1

Which diagram shows the path in which light travels?

1.

2.

3.

4.

Light travels in a straight line. The **first** digit on the keypad is 4.

4

Escape Smeaton's Tower – Clue 2

How many of these statements are true?

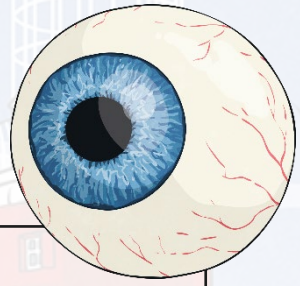
The angle of incidence equals the angle of reflection.
The reflection in a plane mirror is bigger than the object.
The reflected image is as far behind the mirror surface as the object is in front.
Everything in the reflected image is laterally inverted.
Smooth surfaces, like a mirror, will reflect light in a specific direction.
Rough surfaces scatter light in many different directions.

Five of the statements are true. The **second** digit on the keypad is 5.

5

Escape Smeaton's Tower – Clue 3

How many of the features in the table are parts of the eye?



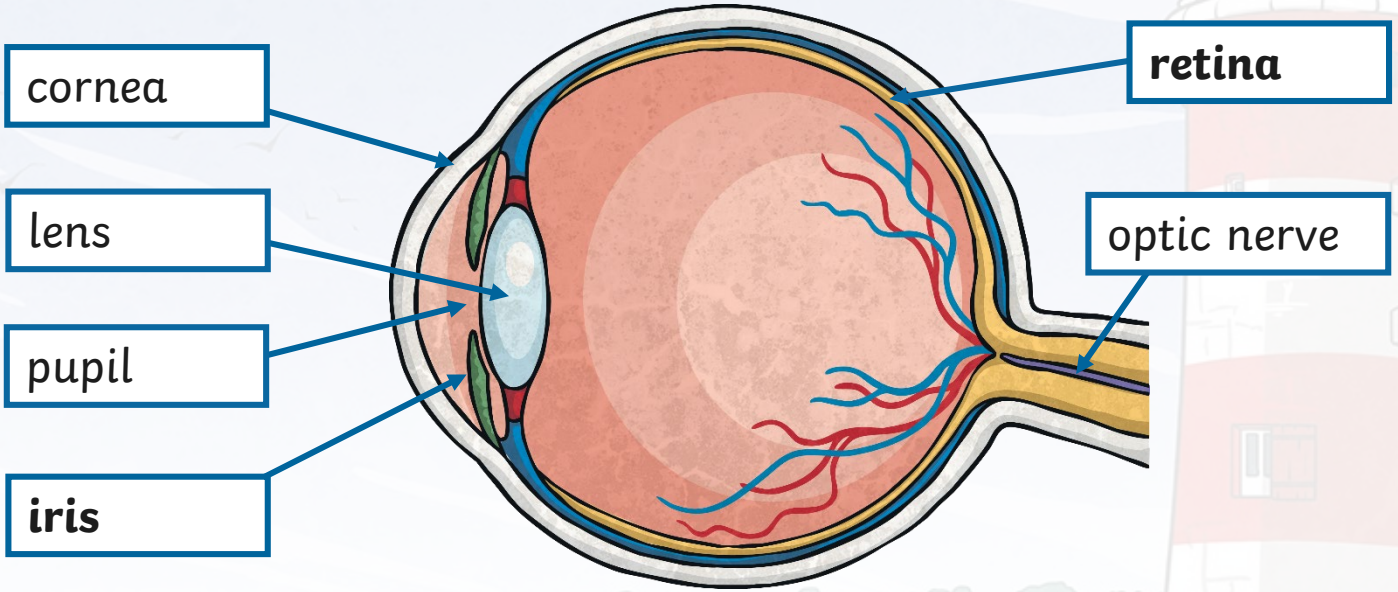
sclera	capillaries	ciliary muscle	retina	duodenum
aorta	optic nerve	cornea	ventricle	trachea
iris	chyme	lens	alveoli	pupil

There are eight parts of the eye in the table.
The **third** digit on the keypad is 8.

8

Escape Smeaton's Tower – Clue 4

How many of the labels are incorrect?



Two of the labels are incorrect: the retina and the iris.
The **fourth** digit on the keypad is 2.

2

Escape Smeaton's Tower – Clue 5

Rearrange the highlighted letters.

An object that lets some light through.

t	r	a	**n**	s	l	u	c	e	n	t

An object that lets almost all light through.

t	r	a	n	s	p	a	r	**e**	n	t

Something that lets no light through.

o	p	a	q	u	e

The highlighted letters can be rearranged to spell ‘one’.
The **fifth** digit on the keypad is 1.

1

Escape Smeaton's Tower – Clue 6

Which is the correct process of how we see things?

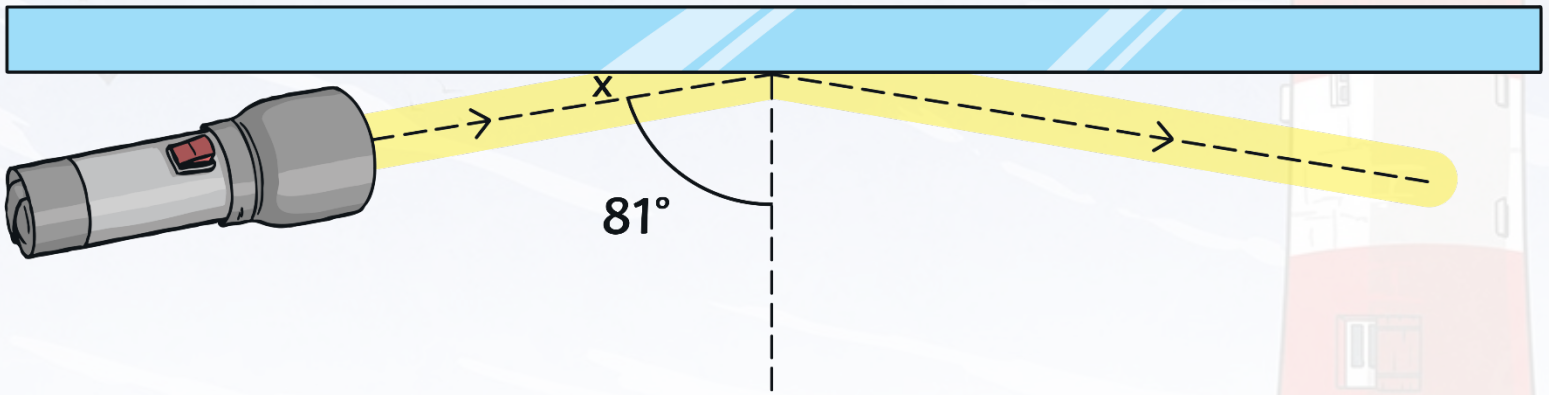
1.	light hits an object, enters the cornea and passes the pupil – the information is sent to the optic nerve – the lens focuses the light on the retina – the information is sent to the brain – brain cells process the image
2.	the lens focuses the light on the retina – the information is sent to the optic nerve – light hits an object, enters the cornea and passes the pupil – the information is sent to the brain – brain cells process the image
3.	light hits an object, enters the cornea and passes the pupil – the lens focuses the light on the retina – the information is sent to the optic nerve – the information is sent to the brain – brain cells process the image

Process 3 is correct.
The **sixth** digit on the keypad is 3.

3

Escape Smeaton's Tower – Clue 7

What is the size of the angle marked ‘x’?



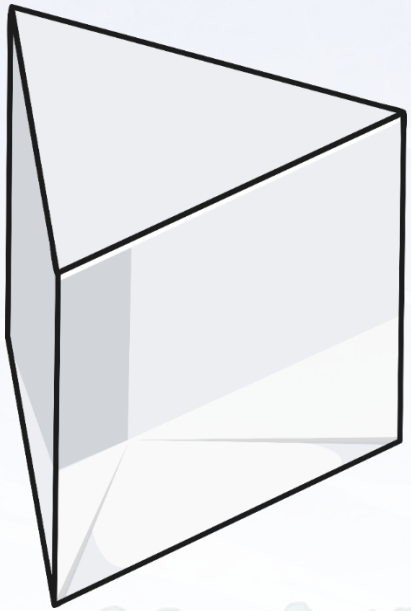
The angle of incidence equals the angle of reflection. A right angle is 90°. Angle x is 9° The **seventh** digit on the keypad is 9.

9

Escape Smeaton's Tower – Clue 8

How many colours are in the visible spectrum?

1. red
2. orange
3. yellow
4. green



5. blue
6. indigo
7. violet

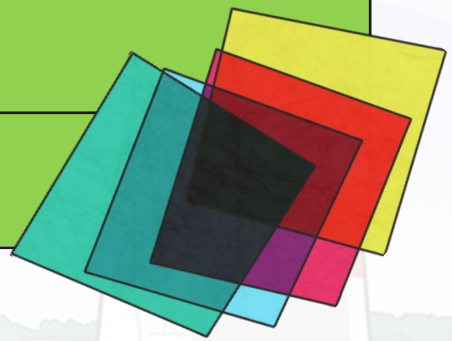
There are seven colours in the visible spectrum.
The **eighth** digit on the keypad is 7.

7

Escape Smeaton's Tower – Clue 9

How many of these statements are false?

A blue object absorbs all colours of light except blue, which it reflects.
A red object absorbs all colours of light except red, which it reflects.
A white object absorbs all of the colours of light.
A black object reflects all of the colours of light.



Two statements are false.
The **ninth** digit on the keypad is 2.

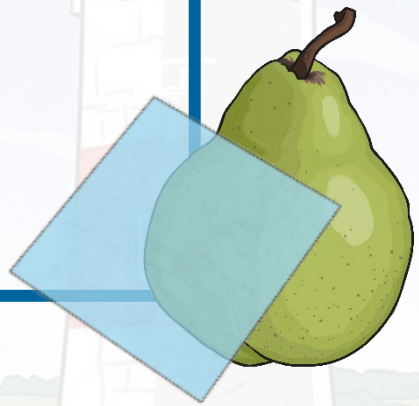
2

Escape Smeaton's Tower – Clue 10

Fill in the missing word below.

A filter only allows certain colours of light to pass through it. A green filter absorbs all colours in the spectrum except green, which it lets through.

If you look at a green pear through a blue filter, it will look **black**.



There are five letters in the word 'black'.
The **tenth and final** digit on the keypad is 5.

5

Escape Smeaton's Tower

Now you've solved all the clues, it's time to enter the code into the keypad and escape Smeaton's Tower!

Digit 1	Digit 2	Digit 3	Digit 4	Digit 5	Digit 6	Digit 7	Digit 8	Digit 9	Digit 10
4	5	8	2	1	3	9	7	2	5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