Colin and Coco's Daily Maths Workout

Workout 3.7   **Answers**

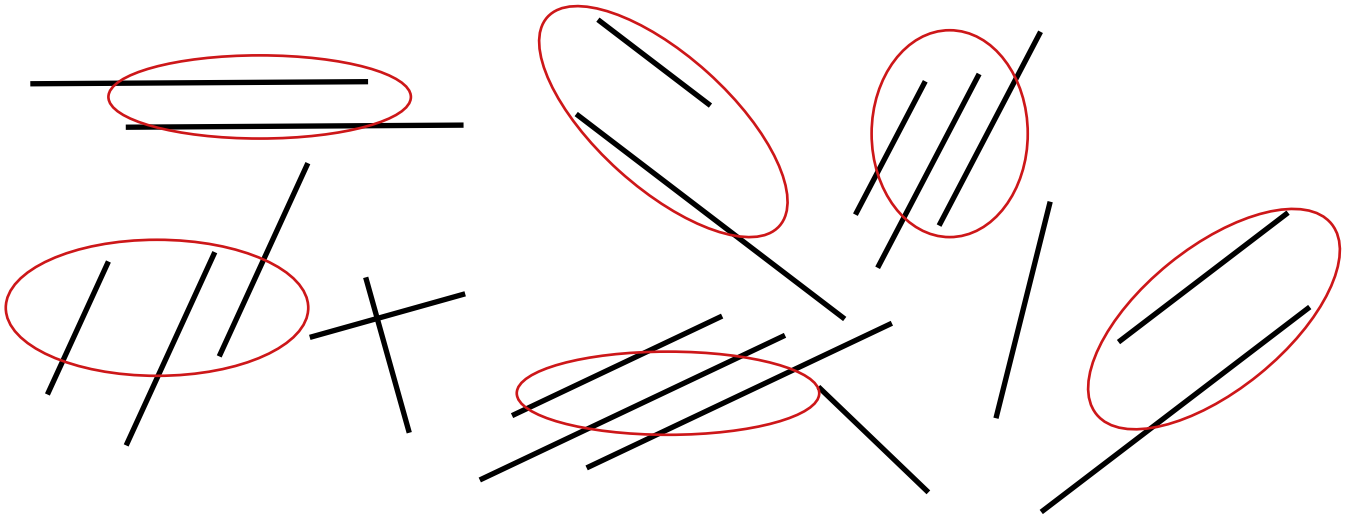Properties of Shapes

Shape Workout
Find lines that are parallel to each other.

Shape Workout
List all the 2D shapes that are surfaces of these 3D shapes.

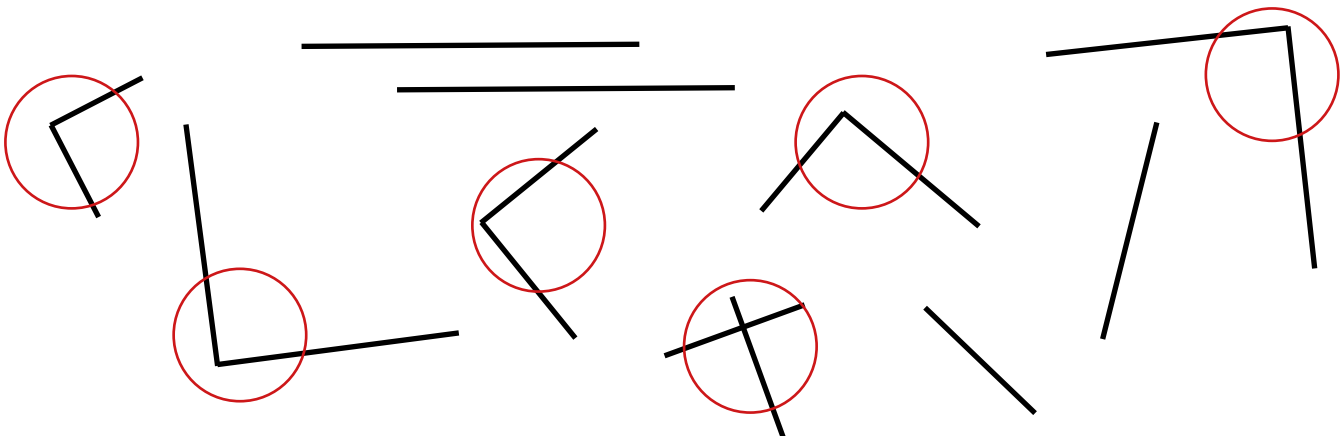| Cuboid	Square based pyramid	Triangular prism
6 rectangles	1 square 4 triangles	3 rectangles 2 triangles

Which 3D shape has 6 square faces?

cube

Which 3D shape has 2 circles and a curved surface?

cylinder

Shape Workout
Find lines that are perpendicular to each other.

Sketch a Shape Game

You need:
Properties of shapes cards (on the next page.)

To play:
Shuffle the cards and place them face down on the table.
Start your turn by turning over a card.
Sketch a shape that has the property on the card.
Now turn over another card.
Sketch a shape that has the properties of both cards.
Now turn over another card.
Sketch a shape that has the properties of all three cards.
Continue until you cannot sketch a shape that has all your properties.
You score the number of properties that you matched.
Replace the cards and shuffle them.

My card says '4 straight sides.'
I have drawn a square.

My second card says 'at least one right angle.'
My square still works.

My third card says 'no equal sides'
I have drawn a 4 sided shape with a right angle.

My third card says '3 straight sides' so I cannot sketch
a shape to match all my cards. I score 3

For example:
If you cannot sketch a shape with the 2 properties you score 1 and it is the next player's turn.

If you cannot sketch a shape with the 3 properties you score 2 and it is the next player's turn.

To win:
The winner is the first player to accumulate a score of 10

Properties of Shapes Cards

3 straight sides

4 straight sides

more than 4 straight sides

no equal sides

at least 2 equal sides

no right angles

at least one right angle

at least one horizontal side

at least one vertical side

at least one acute angle

exactly 2 right angles

at least one obtuse angle

Missing Number Workout

Colin is playing with different types of 3-D shapes.
Place digits in the empty boxes to complete the statements
in several different ways where possible.

Possible Solution

Name of Shape	Number of Faces	Number of Edges	Number of Vertices
Triangular Pyramid	4	6	4
Triangular Prism	5	9	6
Cube	6	12	8
Pentagonal Prism	7	15	10

Now try and complete all the statements together
using the digits 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 once each.

Which digit have you not used?
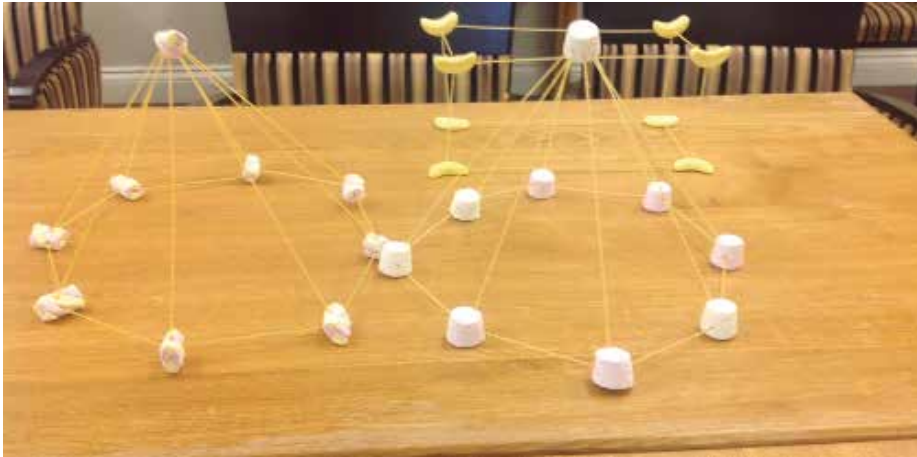Create a statement using this digit.

Spaghetti and Marshmallows

Resources:
Spaghetti (or anything that's long and thin ... straws, sticks, etc.)
Marshmallows (or anything that's good to stick your 'spaghetti'
into such as Jelly babies, Blue Tac, etc.)

Using your resources, make different:

- Cuboids
- Pyramids
- Prisms
- Solids with 8 faces

Investigate if this statement is always, sometimes or never true:

$$Vertices + Faces - Edges = 2$$

Word Problems

Coco and Colin are making shapes using spaghetti for edges and marshmallows for vertices.
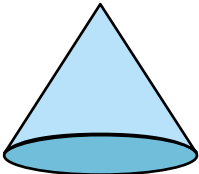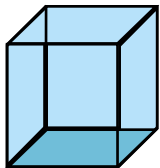
1. Colin makes 4 cubes.
How many marshmallows does he need? 32

2. Coco is making a triangular prism.
How many pieces of spaghetti does she need? 9

3. Colin has 12 marshmallows.
How many triangular-based pyramids can he make? 3
How many square-based pyramids can he make? 2 (2 left over)

4. Coco has made a mixture of pentagonal prisms and pyramids
She counts 26 faces in total.
How many marshmallows and pieces of spaghetti has she used?
2 pyramids and 2 prisms so 50 pieces of spaghetti and 32 marshmallows

Colin likes to go on a 3-D Shape Treaure Hunt.
If Colin visited your house, where would he find ....

Shape	Name	Where in your house?

Who am I?
Workout

Use the clues to work out Colin's mystery number.

You may want to cross numbers out on the 100 grid as you consider each clue.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	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

1) I am not a multiple of 3
2) I am odd
3) My digits are different
4) I am not a multiple of 5
5) My tens digit is less than my ones digit
6) The sum of my digits is even

7) One of my digits is a multiple of 3
8) The difference in my digits is greater than 2
9) The product of my digits is not a multiple of 5
10) I am one less than a multiple of 4

Colin's mystery number is $\boxed{19}$

Create your own 'Who am I?' puzzle

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	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

Please share your puzzle with Colin @MathsCanDo