



Colin and Coco's Daily Maths Workout

Workout 3.7

Properties of Shapes

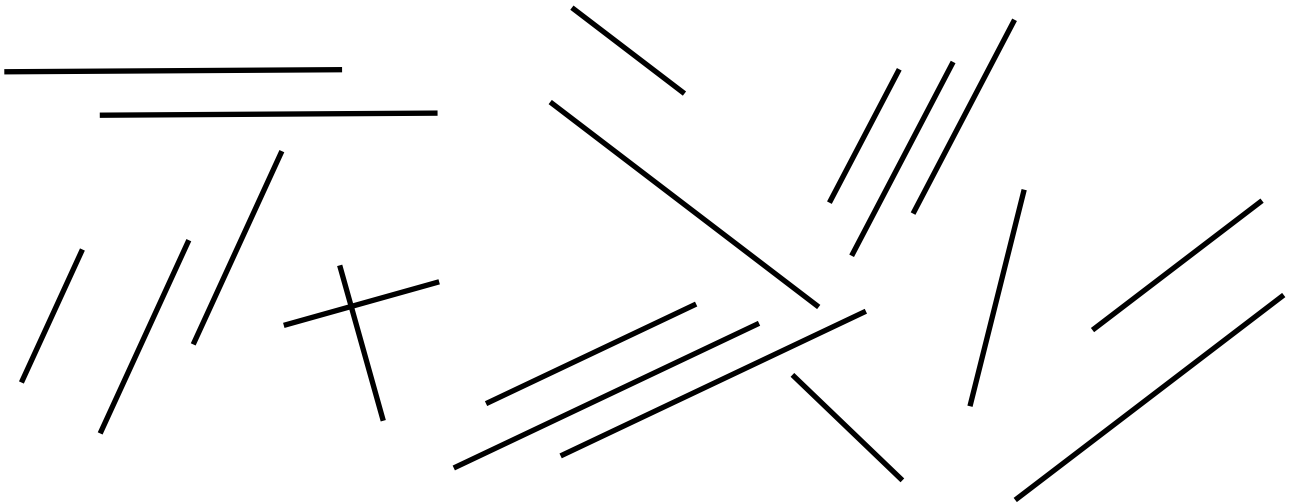




Shape Workout

Find lines that are parallel to each other.

Workout A



Shape Workout

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

Workout B

Cuboid

Square based pyramid

Triangular prism

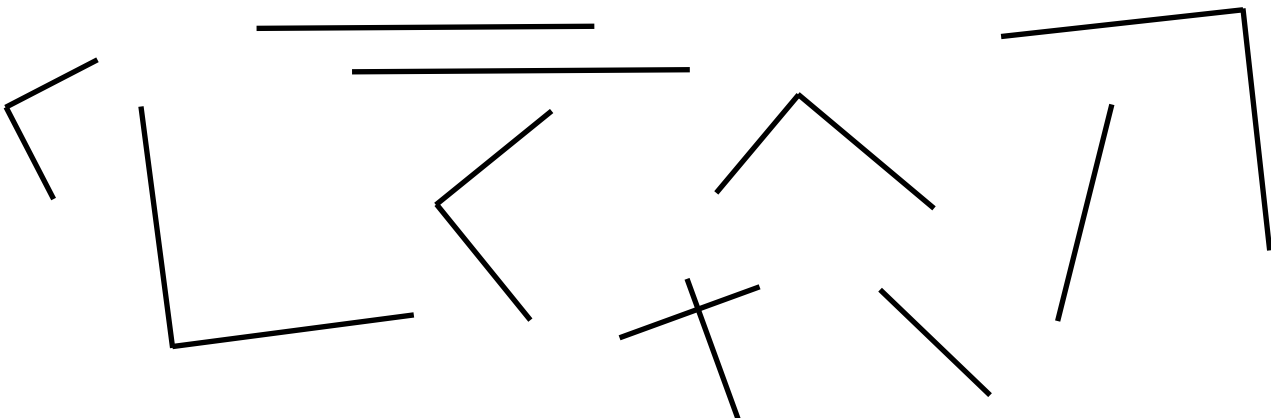
Which 3D shape has 6 square faces?

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

Shape Workout

Find lines that are perpendicular to each other.

Workout C





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

Workout E

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.

| Name of Shape | Number of Faces | Number of Edges | Number of Vertices |
|---------------|----------------------|---|------------------------|
| | 4 | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | <input type="text"/> | 6 |
| | 6 | <input type="text"/> <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | 15 | 1 <input type="text"/> |

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.



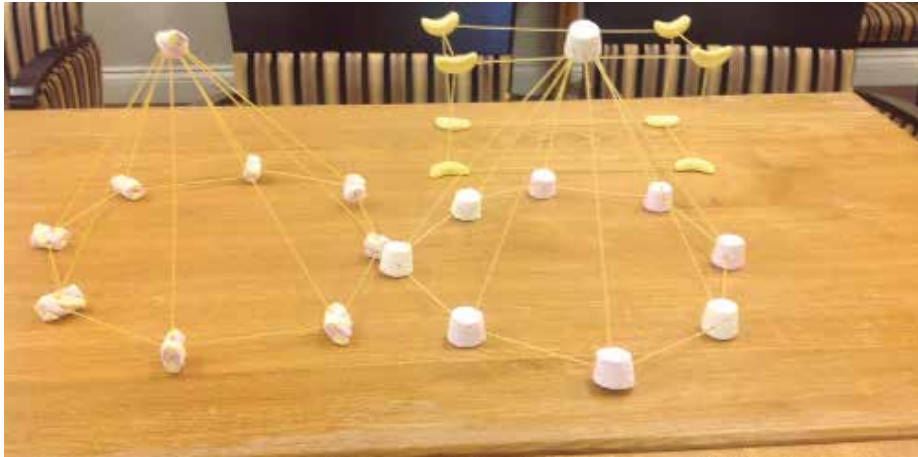
Spaghetti and Marshmallows

Workout F

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:

$$\text{Vertices} + \text{Faces} - \text{Edges} = 2$$



Word Problems

Workout G

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?

2. Coco is making a triangular prism.

How many pieces of spaghetti does she need?

3. Colin has 12 marshmallows.

How many triangular-based pyramids can he make?


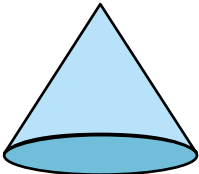
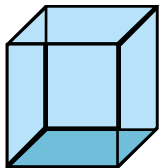
How many square-based pyramids can he make?

4. Coco has made a mixture of pentagonal prisms and pyramids
She counts 42 faces in total.

How many marshmallows and pieces of spaghetti has she used?

Colin likes to go on a 3-D Shape Treasure 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

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