11 Plus Maths and Non-Verbal Reasoning Enhance CEM Course Preview

This preview is designed to show you, in some depth, the work we'll go through in this course. It covers the Maths and Non-Verbal Reasoning elements of CEM 11 Plus exams.

Who should be doing it?

- The course is designed to enhance the skills of pupils going for a CEM 11 Plus Exam.
- It should be central to the work of any child preparing at home.
- It is also very useful for any child using a tutor or going to a tuition centre. **Many Tutors use our courses as the basis of the work they do and find it especially useful for homework. If your tutor doesn't give homework then this course will fill the gap.**

Why is the course so successful?

- The course is fully planned which makes life much easier for parents than using books alone.
- We build in just the right amount of revision as we go along to ensure skills stay fresh.
- The course gradually introduces children to timed tests in the right way so that they build their skills and confidence as they go.
- While the course is regularly updated the core of it has been used for many years with proven success.

Who is this course right for?

This course is ideal for any pupil with around 15-30 weeks to go until the CEM 11 Plus exam. The course is delivered in 20 parts and ideally a week would be spent on each. It could be completed in 15 weeks by working more intensively or in a more relaxed way in 30 weeks.

- No book covers the ground so completely.
- This course is fully structured, revision is built in.
- There's much less planning work for parents to do.

SCROLL DOWN TO SEE COURSE EXAMPLES

⬇

Maths & Non-Verbal Reasoning Enhance - Part 1
This course will help you to develop all the skills you need for the exam. If you do a little work each day and work consistently you will give yourself the best chance.

Maths

1. **Working Accurately**

- **Accuracy table.** Children who can carry out times table based maths quickly and accurately will be well placed to succeed. This test indicates how good your skills are. It's tough but remember...
- **Spot the mistakes.** The... make.

Clear Instructions
Every part of the Maths and Non-Verbal Reasoning Enhance course starts with a front sheet which looks like this. It details every item of work that is in that part and where relevant gives you some guidance on how to approach each item and what to focus on. Full answers are provided for every question.

2. **Mental Maths Techn...** some tips for working...

3. **Mental Maths.** Thes... should be aiming for... should know.

4. **Sudoku Fractions an...** answer ?

5. **Shapes Revision.** It's important to know your shapes inside out. Read this carefully, cover up the words and see if you can remember the descriptions. Get someone to read the descriptions out loud and see if you can name the shapes.

Non-Verbal Reasoning

6. **NVR Type 1 - Like Shapes.** Your first Non-Verbal Reasoning question type. These are not difficult to learn but you need to concentrate to deliver accurate work. Please spend enough time understanding the question type and looking in detail at the answer then go on and do the five questions. If you make a mistake, it's rea... not improve. Very full an... the concept.

Organised for you
One of the main problems with using books is that it is difficult to know which ones to buy and what order to do the work in. We know from feedback that this course solves that problem for many parents leaving them free to help their child.

- Please sign below when...
- Your helper may have t...

Signed: (Parent/Teac...

We hope you enjoyed your first part of the course.

Speed and Accuracy Test

- You have five minutes. Children should be working towards scoring 100%.
- Watch out for the changes to + / ÷ / - / x
- This test will be repeated five times, where mistakes are made it will be an indication that further times tables work and attention to detail is necessary.

8 + 7 =	9 – 4 =	6 x 7 =	54 ÷ 6 =	8 + 4 =
7 x 5 =				
12 – 7 =				
96 ÷ 8 =				
6 x 3 =				
5 + 8 =	14 – 9 =	0 x 8 =	8 + 6 =	12 – 8 =
5 x 6 =	44 ÷ 4 =	7 + 9 =	28 ÷ 7 =	9 x 6 =
5 + 7 =	15 – 6 =	48 ÷ 6 =	5 + 4 =	64 ÷ 8 =
16 – 8 =	36 ÷ 9 =	8 + 8 =	42 ÷ 7 =	7 x 7 =
7 x 6 =	9 – 6 =	72 ÷ 9 =	9 + 8 =	108 ÷ 9 =

Speed and Accuracy Tests

At the beginning of the course we spend time exposing whether pupils have sufficiently solid core skills. As these skills provide the fundamental basis from which children will develop, ensuring these are well established will aid them during the other sections of the course.

Score   /50

Spot the Mistakes - Maths

- Victor has completed his Mental Maths task but unfortunately he's made a number of mistakes. His answers are underlined.
- Circle the mistakes. See if you can work out what he might have done wrong

① 300 + = 1050mm

Spot the mistakes

We also use other accuracy tests like this Spot the Mistakes test. Children that cannot work accurately will not do well in an 11 plus exam because of the time pressure.

② 2 ½ Kg

③ £1.00 – 58p = 42p

⑨ 116mm = 11cm 6mm

④ Find the sum of £1.15 and
   £2.85

⑩ ¼ of £4.16 = £1.04

Find the mistakes

Helping children to switch on their self-checking skills helps them work more accurately in the exam.

⑤ Find th
   costing

90m = 290m

⑥ What is the product of 9 + 99 = 108

⑫ What is the product of 8 and 50 = 58

Marks   /

Area Problems

A rectangular garden comprises a rectangular flowerbed surrounded on three of its sides by a lawn.

Answer the following questions which relate to this diagram.

a)

b)
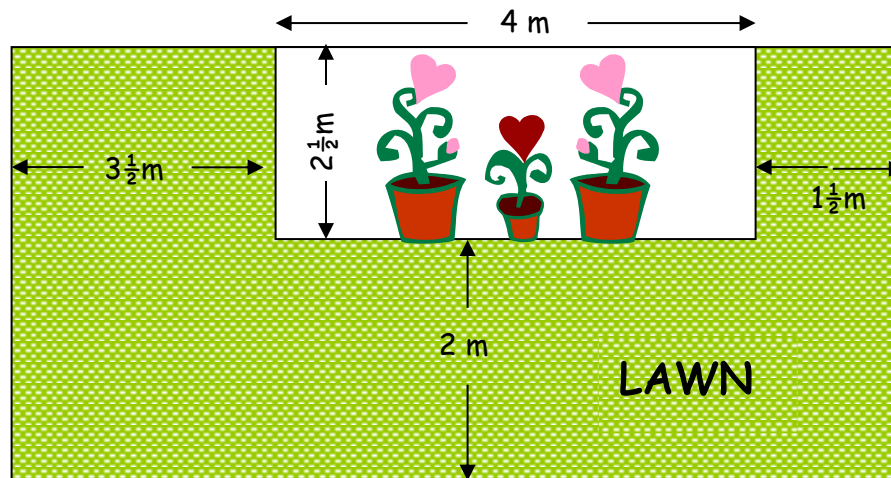
Area Problems

We also make sure we cover the core topics children may get questions on. This sheet is one we use to help children learn about area.

c) _____ garden.

Answer:_____

d) Work out, in square metres, the area of the flowerbed.
   Answer: _____

e) What is the area of the lawn?
   Answer: _____

f) Find the cost of re-sowing the lawn if grass seed costs £1.86 for each square metre of lawn.
   Answer: _____

The BODMAS Rule

The rule for the order in which you conduct calculations is: **BODMAS**

This means:
Brackets **O**rders **D**ivision **M**ultiplication **A**ddition **S**ubtraction.

In other words:

1. You must work out the sum in the **B**racket first and then complete any **O**rders (this also means indices, powers, or roots e.g. 3^2).

2. Next you must work out any **D**ivison or **M**ultiplication.

3. Finally complete any **A**ddition or Subtraction required.

Remember – if a number appears immediately before a bracket it means you must **M**ultiply (the result of the sum in the bracket) by that figure,
so: $5(3.1 + 1.9)$ means $5 \times (3.1 + 1.9) = 5 \times 5 = 25$

Here is an example of the **BODMAS** rule in action:

$6(1.2 + 0.8) - (4.6 - 1.6)$ Do the **B**racket sums first

$= 6 \times 2 - 3$

$= 12 - 3$

$= 9$ ✔

> **BODMAS**
> *As part of each topic introduction/review we include further work and examples to ensure knowledge has sunk in properly.*

Now look at this question:

$6(2.36 + 5.62) =$

$6(2.36 + 5.62) =$ Do the **B**racket sum first - $2.36 + 5.62 = 7.98$
$6 \times 7.98 = 47.88$ ✔   Then **M**ultiply

Please file this away safely because you will need to refer to it again.

TIMED TEST NUMBER 1

Write the missing number in the box:

1.

8 ⟌

<div style="border:1px dotted black; background:lightgreen">

Timed Tests

We start doing easier timed tests early on to get children used to working under the time constraints similar to that of an exam.

</div>

3.

|1 0 ☐|
7 ⟌ 7 6 3

|1 5 3|
5 ⟌ 7 ☐ 5

This calculation has the same number missing from each box.
What is it?

5.

<div style="border:1px dotted black; background:lightgreen">

Timed Tests

While easier than full 11 Plus tests, these tests include questions which could end up in the test itself. This is beneficial as it gets students familiar with the types of question they might encounter.

</div>

... of this
... alves.

this grid into two halves: Start at A and go along
                                the lines, finishing at B.

A →

B

A →

B
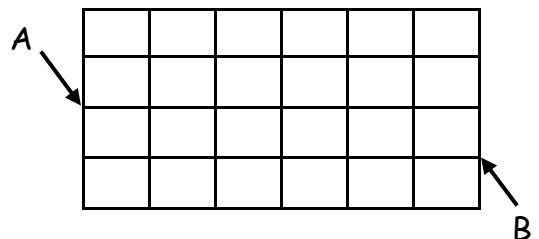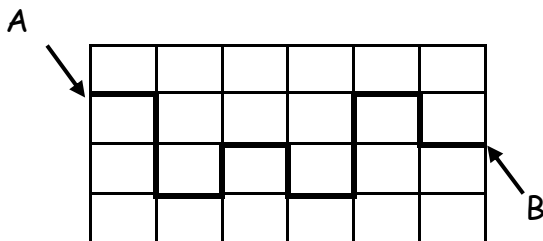
Mathematics Revision Test 2

1. 323.76 + 19 hundredths
   = _____

2. Draw a hexagon in this space:

3. 13^2 = _____

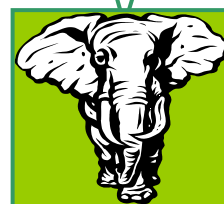4. Draw an obtuse angle – label it.

5. Draw a rhombus

6.

7.

8. 19 cm
   14 cm

   Find the area of this shape:
   = _____

9. 4.9 L = _____ mls

10. Write 555 tenths as a decimal = _____

11. 9 squared = _____

12. 12 x 8 = _____

13. 6 x 7 = _____

14. 9 x 6 = _____

15. How many tenths in 23.9?

NO/YES

20. How many lines of symmetry has a hexagon?
    = _____

SCORE BOX:

how to do
long

Are you improving?   YES/ANY MINUTE NOW

5. Complete the following money problems.

a.   A single bus fare to work costs £1.25. How much have I spent altogether on bus fares by the time I have returned home?   _____

b.   If I go to the newsagent and buy 5 magazines costing £3.99 each. How much d[obscured]   _____

c.   I[obscured]I bought in questio[obscured]   _____

6. Answ[obscured]

a. Six squared   = _____

b. The cube root of 27
              = _____

c. 60% of £60.00
              = _____

d. 2(p – q) when p = 4.7 and q = 2.3   = _____

e. The square root of 6   = _____

f. Two fifths of 75kg   = _____

g. 4(x + y) when x = 6.1 and y = 3.8
                = _____

7. If[obscured]

a.

b.

c.

8. How many lines of symmetry do these shapes have? Some may have none.

a.

b.

c.

d.
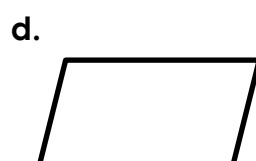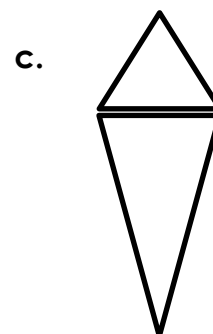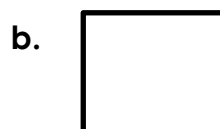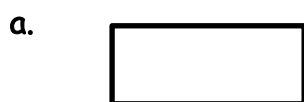
17. When peter went to Spain recently the exchange rate was 1.2 Euros to the pound sterling. He bought a bottle of wine costing 6.7 Euros. What was the cost of the bottle in pounds sterling? (round you answer to the nearest penny). _____

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18. A family build a pond in their garden. When it is full it holds 9900 litres of water. The pond is filled from the garden tap which delivers a litre of water every 3 seconds. How long will it take to fill the pond? _____
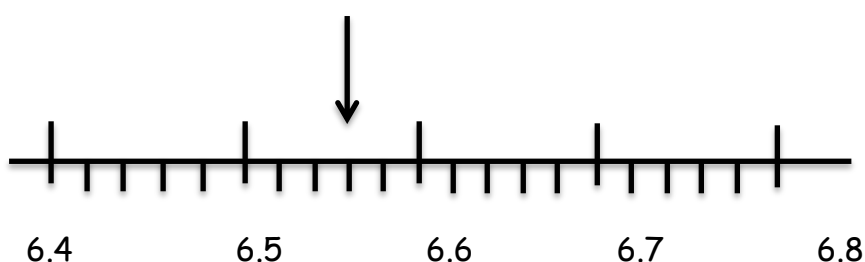
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19. Which a

  A. 3.075

Maths Paper

The papers towards the end are at least as difficult as the questions they will find in the exam so they will be very well prepared. We also ensure they see a variety of different types of question to ensure they are prepared for every eventuality.

20. My bus started 12 m

took 45 minutes. At what time did it arrive? _____

21. What measurement does the arrow point to on the scale below? _____

| | 6.4 | 6.5 | 6.6 | 6.7 | 6.8 |

----

22. A jar of marbles was made up like this:

	Large	Small
Black	8	14
Red	12	16

What percentage of the marbles were small? _____

Non-Verbal Reasoning

1. LIKE SHAPES / TYPE 1

In these questions you will be given an example where one shape becomes another shape. You will then be given a question shape and be asked to choose which one of five shapes it should become. You should use the example to help you choose. You should look at the example and understand exactly what changes for it to become the second shape and then apply the same reasoning to the question shape.

What to look out for

As with all Non-Verbal Reasoning question types this is largely a test of **logic** and **close observation.**

- How many si~~~~
- Are they rot~~~~
- Are they ref~~~~
- Have the sh~~~~ diagonal line~~~~
- What size a~~~~
- What thickn~~~~ shapes? Bol~~~~
- Do shapes th~~~~

Like Shapes - Explanation

We identify the main types of non-verbal reasoning questions. We introduce each with a very detailed explanation and example. We explain what the questions entails and what children need to look out for to solve it.

Technique tips

- Focus exactly on how the first shape has changed to become the second shape, more than one thing may have changed.
- Make a list of the changes if necessary.
- Once you have done this look at the answer options and see which has changed in the same way.
- Often you will be left with two options which are close, there will always be a small distinguishing item which makes one of these a closer match than the other (e.g. direction of diagonal lines within a shape). You will need to renew your focus to find it.
- Unless you are doing a timed test do one question at a time. Give your answer then check if it is correct and review the explanation. This takes time but looking at the answer and explanation while the question is still fresh is the only way to learn.
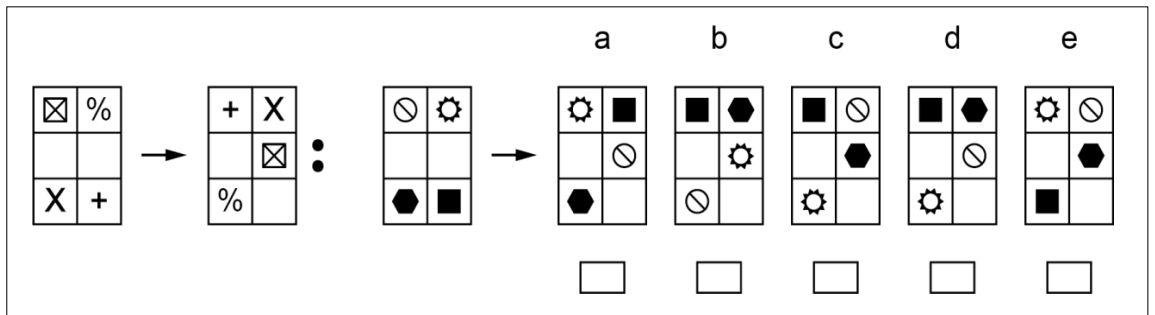
Example
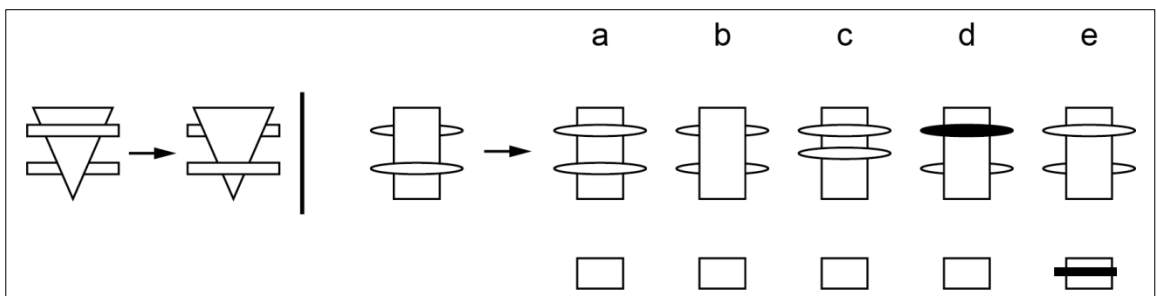
Explanation

There is no change in the large shape from the first set of shapes to the second. However the shape that is behind the larger moves to the front and the other shape that is in front moves behind.

Non-Verbal Reasoning
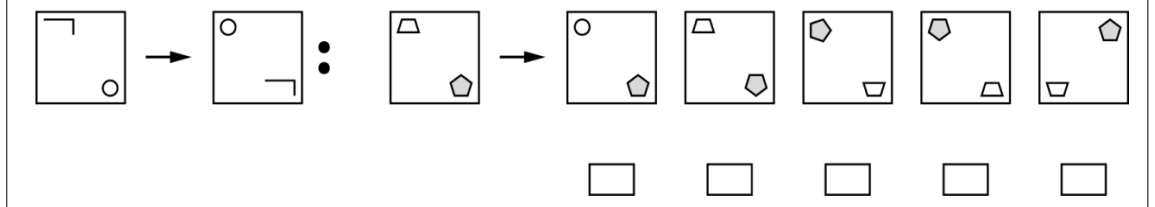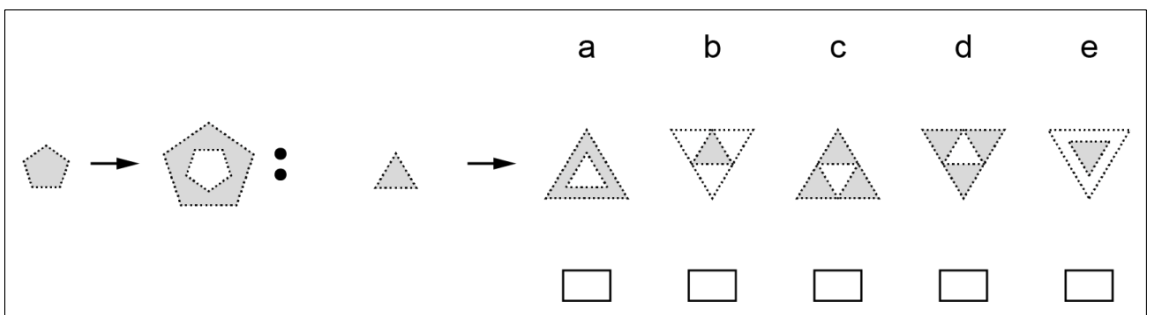
1

2

Like Shapes - Examples

Having explained the question type we then give children a few questions to try out to secure their learning. Each question has a very detailed solution so that children can learn from their mistakes.
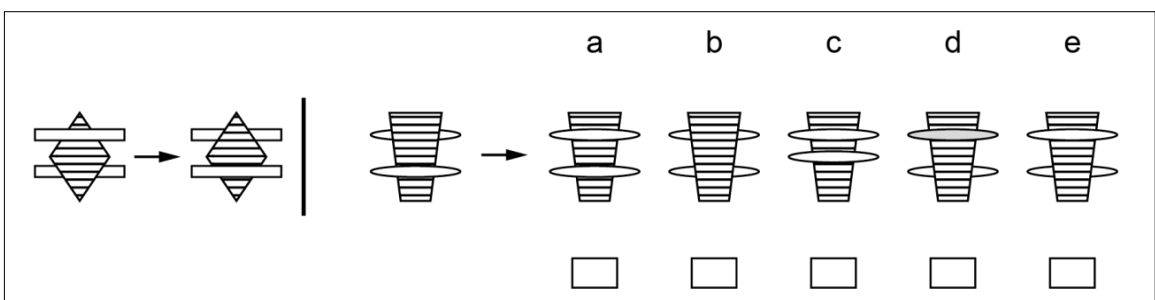
3

4

5

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11 PLUS PREPARATION

NON-VERBAL REASONING PAPER

Name:	
Date of Birth:	
Today's Date:	

READ THESE INSTRUCTIONS CAREFULLY BEFORE STARTING.

- You have 15 minutes to complete the

- Mark your

- This paper example is given at

  Timed Papers

  Once we have introduced children to each of the different Non-Verbal Reasoning questions types we have identified we then start giving them timed revision tests.

- Each question is worth one mark. If you can't do a question, then move on.

- If you finish early check your answers for mistakes.
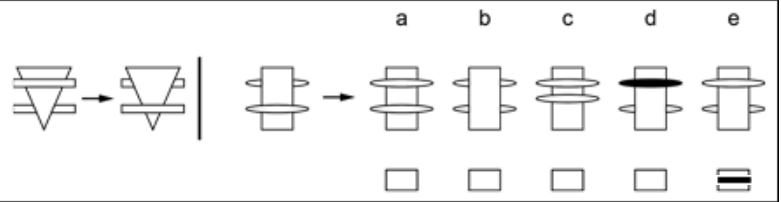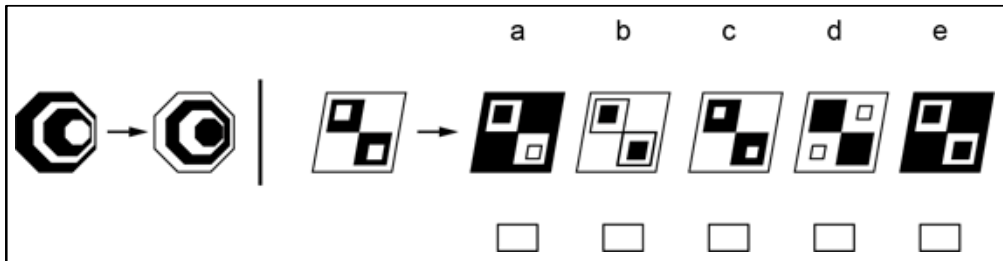
- Once the test has started you may not ask for help.

1. LIKE SHAPES / TYPE 1

Work out which of the answer shapes is related to the question shape in the same way that the example shapes are related.
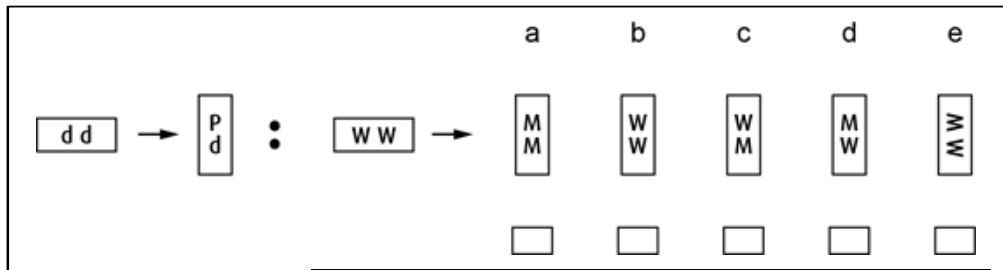
Example

1

2

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2. ODD ONE OUT / TYPE 2

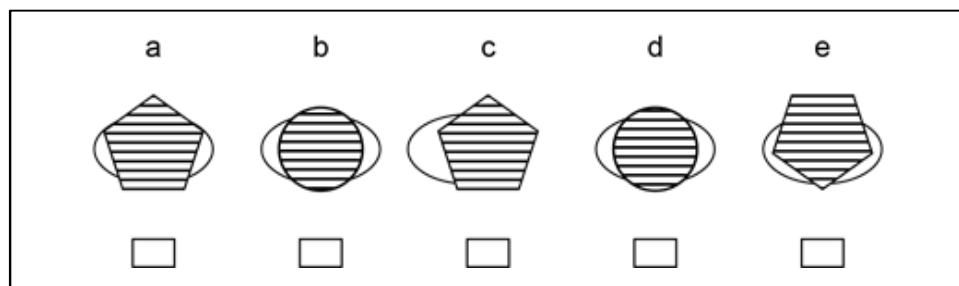Work out which of the shapes is different to the rest.

Timed Papers

This test contains a mixture covering all the different question types with a tough time allowance of 15 minutes to get children used to the exam pressure.
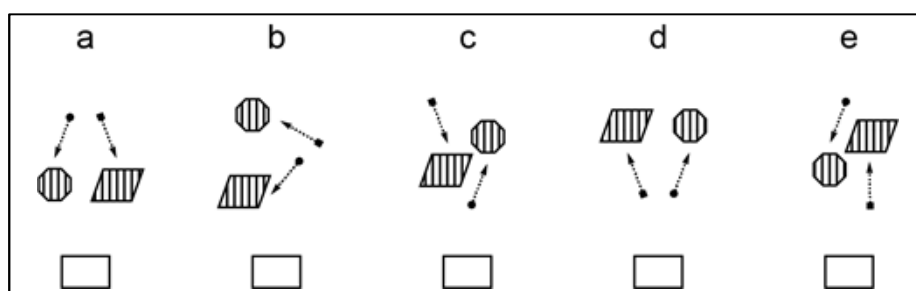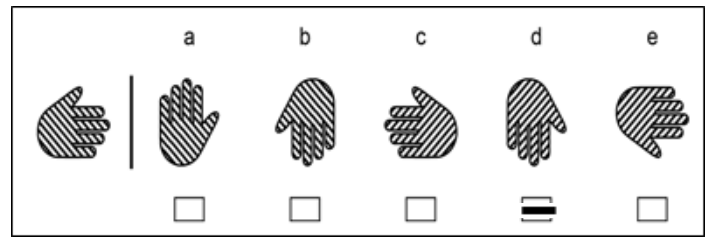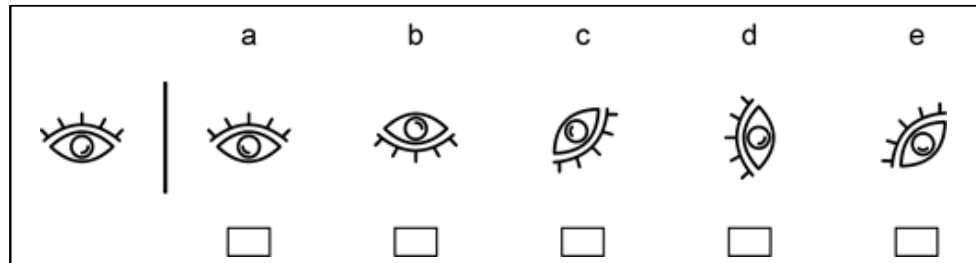
1

2

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3. ROTATIONS / TYPE 3

Work out which of the answers is a rotation of the question shape.

	a	b	c	d	e

1

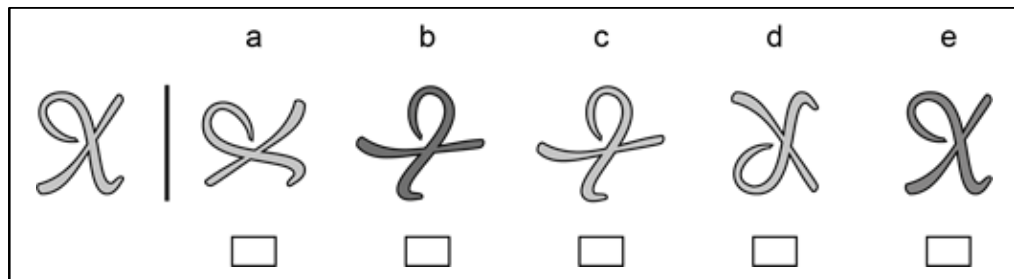|	a	b	c	d	e

2

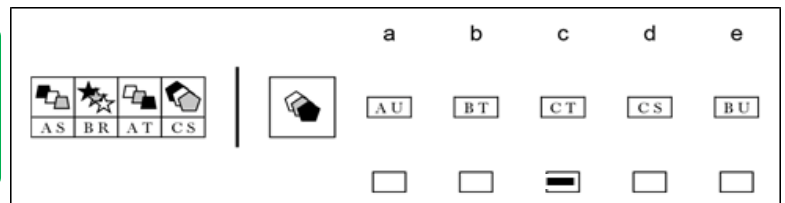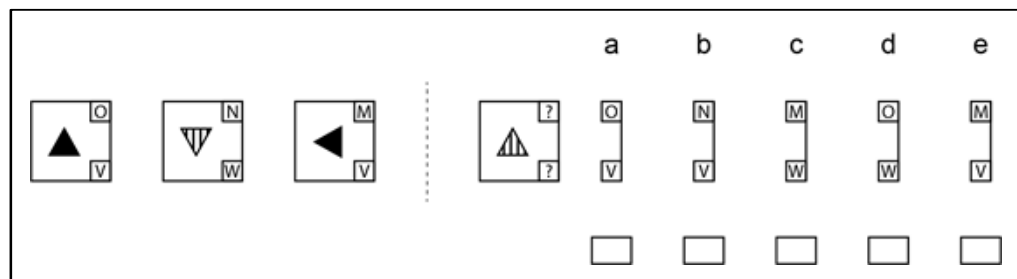|	a	b	c	d	e

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4. CODE BREAKER / TYPE 4

Look at the sequence to work out how the codes match the shapes, then select the correct answer code to match the question shape.
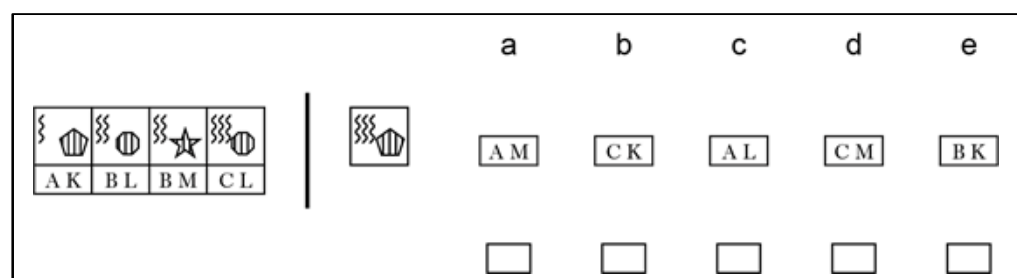
Example

AS	BR	AT	CS			a	b	c	d	e
						AU	BT	CT	CS	BU

1

O	N	M		?	a	b	c	d	e
V	W	V		?	O / V	N / V	M / W	O / W	M / V

2

AK	BL	BM	CL			a	b	c	d	e
						AM	CK	AL	CM	BK

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Revision Test 9

1.   40°
2.   9m
3. $\frac{3}{4}$
4.   £28
5.   1.0   1.2
6.   8
7.   3.96 (
8.   52
9.   7
10.   270g

Equations

1. 4
2. 11
3. 12
4. 15
5. 7
6. 7
7. 15
8. 28
9. 7
10. 14
11. 18
12. 20

Maths paper

Page 1

1.
a. 120,000
b. 2600
c. 300,000
d. 180,000
e. 14,400

2.
a. 10
b. 28
c. 75
d. 6.5
e. 4

Full answers for every question

There are answers provided for every question in each part of the course.

Where a full detailed explanation is needed we give it.

d. 800
e. 8500

5.
a. 42
b. 26
c. 13
d. 126
e. 21

6.
a. £9.55
b. 5
c. 125

7.
a. 1/4 hr
b. 3/4 hr

c. 1/10 hr
d. 7/12 hr
e. 1/5 hr

Page 3

8.
a. square
b. rectangle
c. equilateral triangle
d. kite
e. Right-angled triangle
f. parallelogram

9.
a. 72
b. 37
c. 20
d. 15.75

Page 4

10.
a. 180 Euros
b. 225 US Dollars
c. 285 Australian Dollars
d. 285 Swiss Francs
e. £10
f. £2
g. £280
h. £25

11.

a. -3 storage
b. -4
computers
c. -2
d. -8
e.
Lift A= -1 Lift B = ground floor

Page 5

12.
a. 90°
b. 180°
c. 150°
d. 240°
e. 270°
f. 150°

13.
a. 7hr 15 mins
b. 1kg

Page 6

14.
a. F & R
b. H & W
c. H

15.
a. 4
b. 2
c. 2