

Addendum to 2004 AS Level Thinking Skills Syllabus and Assessment (8436)

As of June 2004, the format of the assessment of the AS level Thinking Skills (8436) will be changed as follows:

- The blocks of 6 Applied Arithmetic questions will be replaced by individual Applied Arithmetic questions. Examples of the individual question types are given below
- The Communications Section will be removed
- The format of Paper 1 will consist of alternating sets of 5 Applied Arithmetic questions and 5 Assessing Argument questions
- There will be a total of 25 Applied Arithmetic questions and 25 Assessing Argument questions in Paper 1
- The total number of marks available for Paper 1 remains 50
- The duration of Paper 1 remains 2 hours
- There is no new syllabus content for Paper 1
- There is no change to Paper 2
- From June 2006, there will be a change in syllabus

Examples of individual Applied Arithmetic questions.

Example Questions

Example 1: Extracting and Processing Data

The table below shows the price of various ladders. I need a ladder at least 8m long to reach the gutters of my house. I want to store it in my garage which is only 4.2m long.

What is the lowest price I must pay to satisfy these conditions?

<i>Length closed (m)</i>	<i>Length extended (m)</i>	<i>Lightweight (DIY use)</i>	<i>Heavyweight (Trade use)</i>
Triple section ladders:			
2.6	6.0	£82	£100
3.0	7.5	£104	£120
3.5	9.0	£133	£150
4.0	10.0	---	£169
Double section ladders:			
3.0	5.3	£52	£64
3.5	6.2	£67	£82
4.0	7.2	£78	£95
4.5	8.3	£98	£115
5.0	9.0	---	£140
5.5	10.0	---	£155

- A £78
- B £98
- C £133
- D £150
- E £169

The answer is **C**. We need to find a ladder which extends to 8m but has a closed length of no more than 4.2m. There are no double section ladders which fit the requirements. Two triple section ladders are possible, one extending to 9m and the other to 10m. With heavyweight and lightweight options taken into account there are three possibilities. We require the cheapest and this costs £133.00. A lightweight ladder with a closed length of 3.5m and an extended length of 9m.

- A £78 - lightweight - too short when extended
- B £98 - lightweight - too long when closed
- D £150 - heavyweight - more expensive than C
- E £169 - heavyweight - more expensive than C

Example 2: Choosing a Model

Mr Jones has to renew the white lines on a 1 km stretch of road. Each edge of the road is marked with a solid line and there is a "dashed" line in the centre. Drivers are warned of approaching bends by two curved arrows. Mr Jones will have to paint four curved arrows. The manufacturers have printed the following guidance on each 5 litre drum of paint.

Solid lines - 5 metres per litre
Dashed lines - 20 metres per litre
Curved arrows - 3 litres each

How many drums of paint will Mr Jones require?

- A 53
- B 92
- C 93
- D 103
- E 462

The answer is **C**. The solid lines require 200 litres for each side of the road ($1000 \div 5 = 200$). The dashed lines require 50 litres ($1000 \div 20 = 50$). The arrows require $3 \times 4 = 12$ litres. The total amount of paint is $200 + 200 + 50 + 12 = 462$ litres. Each drum contains 5 litres of paint, so 93 drums will be needed ($462 \div 5 = 92.4$). 92 drums will not be enough so 93 will be needed. The final drum will be only partially used.

- A It has been assumed that there is a solid line on only one side of the road.
- B The calculations are correct but it has been assumed incorrectly that 92 drums would be sufficient.
- D It has been assumed that there are two dashed lines rather than one.
- E The total amount in litres has been calculated but not the number of drums required.

Example 3: Choices and Decisions

I wish to tile an area of wall 120cm wide by 100cm high. Tiles are 20cm square. I will, therefore, need $6 \times 5 = 30$ tiles.

Which of the following uses the same method of calculation as that above?

- A** A staircase is 3m high. Each step rises 0.25m. Therefore, there are 12 steps.
- B** A room is 4.2m by 2.0m. Carpet costs £1000 per square metre. Therefore, it will cost £84.00 to carpet the room.
- C** A box containing sugar cubes is 10cm x 10cm x 5cm. A sugar cube is 1cm on each side. Therefore, the box contains 500 cubes.
- D** Using square tables 1.5m on each side, I need to make up a conference table 6m x 3m. Therefore, I will need 8 tables.
- E** I work 40 hours a week and earn £5.00 an hour. Therefore, in 4 weeks I will earn £800.00.

The answer is **D**. The procedure of multiplying 6×5 is based on 6 tiles fitting along one edge and 5 tiles along another. In option **D**, 4 of the small tables will fit along the 6m side and 2 along the 3m side. The computation will therefore be 4×2 .

Option **A** divides 3 by 0.25.

Option **B** multiplies 4.2 by 2.0 by 10.

Option **C** multiplies 10 by 10 by 5.

Option **E** multiplies 5 by 40.

Although in **D** there is a multiplication, this is the only case in which the numbers to be multiplied must first be obtained as they are in the tiling example.