



THINKING SKILLS

Paper 2 Critical Thinking

1 hour 45 minutes

You will need: Answer booklet (enclosed)

- Answer **all** questions.
- Follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [].

[Turn over

Section A

Study the evidence and then answer Questions 1 and 2.

Source A**General-interest magazine**

Problems can be solved more quickly by groups than by individuals, according to recent research.

840 students at a European university, all of whom were of above-average academic ability, were involved in the study. Individuals and groups ranging in size from two to five members attempted various verbal, numerical or logical problems. The smallest groups solved the problems as effectively as the better of the two students they contained could have done, implying that such a group is not large enough to benefit from team-working. The groups containing three, four or five people collectively performed better than even the best of the 840 students who were working alone.

The researchers concluded that discussing and analysing problems together, and evaluating possible solutions as a group, made the unit more effective than even the best individual member of it would have been if working alone. In this case, the whole was greater than the sum of its parts.

Source B**Dictionary of experimental psychology**

The Wason selection task is one of the best known of all reasoning tests. It tests people's ability to make inferences using logical statements of the form *if P, then Q*. Usually only around 10% of people solve it correctly working alone. However, when the task is presented to small groups of participants, who are asked to solve it collectively, several academic studies (using university students as participants) have shown that the success rate can rise to as high as 70%.

Source C**Business textbook *The Power of the Individual***

Clearly, there are many tasks that can only be completed by human beings working together: a brief look at the list of the Wonders of the World, such as the Taj Mahal or the Giza Pyramids, makes that clear. Indeed, perhaps most creative work is a community effort. However, it is important not to undervalue what can be achieved by exceptionally talented individuals.

Generally speaking, our brains are more efficient when we are working alone. As a basic rule, if a task can be completed successfully by one person who has the necessary skills, then it should not be done by a group. Sharing the task between several people often results in it being done less quickly and less well than if done by a single, capable person. In many types of activity, an individual human brain is normally less effective when working in a group situation.

One result of the superiority of the solo thinker is that the most successful businesses nearly always have a single person at their head, rather than a committee. There may be other people to help, advise or guide, in the process of decision-making, but the final decision on any topic should come from the person at the top. There can only be one captain in charge of a well-run ship.

Source D

Education journal

It is often said that many problems can be solved more effectively by a group of people working together than by the members of the group working on their own. However, in more than 30 years of teaching mathematics in various schools, that has not been my experience. In my professional opinion, students perform best on their own.

If I ask a class consisting of 30 students aged 13 or 14 years to come together to tackle a problem as a joint project, the outcome is often chaos, even if I divide them into two or three separate groups. They become noisy and excited, and getting them to focus on the work in hand is almost impossible. However, if I give them the problem to solve either singly or paired with one other student, there is a different outcome. Correct solutions are found quickly, even by students of average ability, assuming that the problem is not too difficult for most members of the class.

- 1
 - (a) Is Source B an argument? Justify your answer. [2]
 - (b) Assess the reliability of Source D. [3]
 - (c) Source A claims that 'Problems can be solved more quickly by groups than by individuals'.
Identify and explain **two** weaknesses in Source A's support for this claim. [4]
 - (d) How well does Source B support the claim made in Source A? [4]
 - (e) Identify **two** ways in which the evidence in Source D is **not** inconsistent with the claim made in Source A. [2]

- 2 *You are advised to spend some time planning your answer before you begin to write it.*
 'People work better in cooperation with others than on their own.'
 To what extent do you agree with this claim? Write a short, reasoned argument to support your conclusion, using and evaluating the evidence provided. [8]

Section B

Read the following passage and then answer Questions 3, 4 and 5.

- 1 In many cultures, work mainly involving the use of one's brain is viewed as being of higher value than manual, physical work. This is as true nowadays as it has ever been. However, manual work and mental work should be valued equally. Of course, few activities are either wholly mental or wholly physical; most are a mixture of the two, but usually one element is prominent.
- 2 First of all, and maybe most importantly, people need adequate food, shelter and clothing. Since humankind first appeared, our experience has been that there is only one way to meet these needs: we must take the raw materials found in the world and work to turn them into items that provide what we require. Manual work is essential to providing for people's basic needs and hence it is critical to their survival.
- 3 Some people are fortunate enough to be able to take for granted that their basic needs are being met. These people are the ones most likely to believe that the only valuable work is done sitting in front of a computer screen. They forget the workers employed in essential, but physically demanding, jobs such as cleaning, assisting in kitchens, or caring for the elderly.
- 4 Unlike occupations that are mostly 'brain work', manual work is good for our physical health. It requires us to use our bodies regularly. This type of activity decreases the chances of people suffering from medical conditions such as obesity or muscle pain, which are often an occupational risk for those whose work requires very little physical activity. Manual workers also benefit from access to fresh air and natural light.
- 5 Manual work has a positive effect on our brain chemistry, and therefore it can also be good for our mental health. Regular physical exercise that is moderately demanding causes a boost of many hormones like dopamine and serotonin that have psychological benefits for us. Studies prove beyond doubt that many hormones produced by vigorous physical activity can make us feel more optimistic, reduce stress, and help us to sleep better. People who use gyms regularly know this.
- 6 It is sometimes said that manual work is degrading. However, given that manual and mental work are of equal value, it follows that either both are degrading or neither one is. Since it would make no sense to claim that mental work is degrading, it follows that this is equally untrue of physical work.

- 3 (a) Using the exact words from the passage as far as possible, identify the *main conclusion*. [2]
- (b) Using the exact words from the passage as far as possible, identify **two intermediate conclusions** from paragraphs 2 to 4. [4]
- (c) Using the exact words from the passage as far as possible, identify **one counter-assertion**. [1]
- (d) Identify the following argument element from paragraph 5:
 'dopamine and serotonin' [2]
- (e) Identify **one unstated assumption** required by the reasoning in paragraph 4. [2]
- 4 (a) Identify and evaluate an *appeal* in paragraph 2. [2]
- (b) Identify and explain **one** flaw or weakness in the reasoning in paragraph 3. [2]
- (c) Explain how the reasoning in paragraph 5 is weakened by the flaw of *conflation*. [2]
- (d) Identify and explain **one** flaw or weakness in the reasoning in paragraph 6. [2]
- 5 *You are advised to spend some time planning your answer before you begin to write it.*
- 'It is more important that people enjoy doing their work than that it is highly paid.'
- Write your own short argument to support **or** challenge this claim. The conclusion of your argument must be stated. Credit will not be given for repeating ideas from the passage. [8]

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