



CONCOURS ARTS ET MÉTIERS ParisTech - ESTP- ARCHIMEDE

QCM – ANGLAIS FACULTATIF MP - PC - PSI

Durée 1 h

Si, au cours de l'épreuve, un candidat repère ce qui lui semble être une erreur d'énoncé, d'une part il le signale au chef de salle, d'autre part il le signale sur sa copie et poursuit sa composition en indiquant les raisons des initiatives qu'il est amené à prendre.

Pour cette épreuve, l'usage des machines (calculatrices, traductrices,...) et de dictionnaires est interdit.

AVERTISSEMENT

- Chaque candidat vérifie qu'il a le bon document-réponse identifié en haut à gauche, par son centre d'écrit, son numéro de table, son nom et sa date de naissance.
- Seul un stylo bille ou feutre de couleur noire est autorisé pour répondre.
- Une réponse est constituée par une croix dans l'une des quatre cases A, B, C ou D de la première ligne.
- En cas d'erreur, ne pas raturer, mais utiliser la seconde ligne réponse en cochant la case souhaitée.
- Pour annuler une réponse, cocher les quatre cases de la seconde ligne.

INSTRUCTIONS GENERALES

Définition et barème :

QCM en trois parties avec quatre propositions de réponse par item.

I. Compréhension : 12 questions (10 points sur 20)

II. Lexique : 12 questions (5 points sur 20)

III. Compétence grammaticale : 15 questions (5 points sur 20)

Réponse juste : +3 Pas de réponse : 0 Réponse fausse ou réponses multiples : -1

Instructions :

Lisez le texte et répondez ensuite aux questions.

Choisissez parmi les quatre propositions de réponse (A, B, C ou D) celle qui vous paraît la mieux adaptée. Il n'y a qu'une seule réponse possible pour chaque item.

Reportez votre choix sur la feuille de réponse.

ANGLAIS

HUMAN INTELLIGENCE: CLEVERER STILL

Science has few more controversial topics than human intelligence—in particular, whether variations in it are a result of nature or nurture, and especially whether such variations differ between the sexes. The mines in this field can blow up an entire career, as Larry Summers found out in 2005 when he spoke of the hypothesis that the mathematical aptitude needed for physics and engineering, as well as for maths itself, is innately rarer in women than in men. He resigned as president of Harvard University shortly afterwards.

It is bold, therefore, of Jonathan Wai, Martha Putallaz and Matthew Makel, of Duke University in North Carolina, to enter the fray with a paper that addresses both questions. In this paper, just published in Current Directions in Psychological Science, they describe how they sifted through nearly three decades of standardised tests administered to American high-school students to see what had been happening to the country's brightest sparks.

They draw two conclusions. One is that a phenomenon called the Flynn effect (which weighs on the “nurture” side of the scales because it describes how IQ scores in general have been rising over the decades) applies in particular to the brightest of the bright. The other is that part, but not all, of the historic difference between the brainiest men and women has vanished.

The three researchers drew their data from Duke University's Talent Identification Programme, TIP, which is designed to ferret out especially clever candidates early on: all the participants had scored in the top 5% of ability when confronted with exams designed for much older students. TIP, in turn, draws on three national exams: SAT, EXPLORE and ACT. Altogether, Dr Wai, Dr Putallaz and Dr Makel looked at data from 1.7m children. Those data spanned the years between 1981 and 2010.

In the general population boys are well known to do a bit better than girls in maths. Girls, in turn, edge out boys on tests of verbal reasoning. The result is similar overall IQ scores. Among the best young mathematical brains, however, that equality does not pertain. Here, boys do a lot better at maths than girls—but less better than they used to, as the researchers discovered.

In the early 1980s, the ratio of males to females in the top 0.01% of maths scores in SAT, the Scholastic Aptitude Test, was around 13 to 1. By the early 1990s it had fallen to four to one. After this, however, it remained obstinately unaltered. The other two tests, both of which post-date the period in which the SAT shows those huge changes, indicate less lopsided sex ratios of between two and three to one. But neither shows girls making much recent progress towards equality.

This study is not perfect. Its most interesting result rests on data from just one of the three sets of exams it looked at and its sample sizes are, necessarily, small. But it chimes with the findings of a much older investigation, carried out in 1983 by a group of researchers at Johns Hopkins University, which also discovered a male-to-female sex ratio of 13:1 among the most able young mathematicians.

Why a dramatic rise in the aptitude of America's brightest young female mathematicians should then be followed by two decades of stagnation is not obvious, and, not being experts in mine-

clearance, the researchers offer no hypothesis. It is clear that the rise itself must be “nurture” of
40 some sort—possibly a change in teachers’ attitudes towards girls who are interested in maths—
but the subsequent stasis could have either explanation. A line of reasoning in favour of “nature”
is that put forward by Simon Baron-Cohen, a psychologist at Cambridge University. This
connects the extreme systematising patterns of thought which make a good mathematician with
the preponderance of men among those with Asperger’s syndrome, a form of autism that does not
45 harm a person’s general intelligence. But the disparity could equally well be the result of some
as-yet-unelucidated difference between the ways girls and boys are brought up.

That such unelucidated environmental influences can have real effects on IQ is eloquently
illustrated by the Flynn effect. This phenomenon, brought to the world’s attention in the 1980s by
James Flynn of the University of Otago, in New Zealand, is that average IQs around the world
50 have been rising at the rate of 0.3 points a year for the past eight decades. [...]

No one knows what causes the Flynn effect. Theories range from better nutrition, via a more
stimulating general environment (thanks to such things as television, radio, the internet and video
games), to the phasing out of lead in petrol and paint. What is clear is that it cannot be a change
in gene-given ability, which is what most people mean by “nature” in this debate, because too
55 few generations have passed for natural selection to have had any meaningful impact.

The Economist, December 22, 2012
(abridged and adapted)

I. COMPREHENSION

Choisissez la réponse qui vous paraît la plus adéquate en fonction du sens du texte.

- | | |
|---|---|
| <p>1. From line 1 to line 6, it should be understood that according to Larry Summers:</p> <ul style="list-style-type: none">(A) Boys are born with higher abilities in some scientific subjects.(B) Girls are not interested in maths and physics.(C) Boys and girls have equal capacities in scientific topics.(D) Girls are keener on maths than on physics and engineering. <p>2. From line 7 to line 11, it should be understood that:</p> <ul style="list-style-type: none">(A) Wai, Putallaz and Makel have been carrying out their study for 30 years.(B) They had Duke University students take standardised tests for 30 years.(C) High-school students have taken the same standardised tests for 30 years.(D) The 3 researchers used student standardised tests to carry out their research. | <p>3. From line 12 to line 15, it should be understood that « Flynn effect » refers to:</p> <ul style="list-style-type: none">(A) The direct link between IQ scores and eating habits.(B) The fact that intelligence is inborn.(C) The steady increase of IQ score throughout history.(D) The rise of the levels of IQ score tests over the last decades. <p>4. From line 16 to line 21, it should be understood that:</p> <ul style="list-style-type: none">(A) All the students who had taken the tests did much better than older students.(B) 5% of the students who had taken the tests did much better than older ones.(C) Though intended to older students, the tests were successfully passed by all the participants.(D) Only 5% of the participants got top results. |
|---|---|

5. From line 22 to line 25, it should be understood that:
- (A) Today, girls do much better than boys at maths.
 - (B) In the past, girls used to do much better at maths than today.
 - (C) Boys and girls have equal capacities in maths.
 - (D) The difference between boys and girls in math abilities is much smaller today.
6. From line 26 to 31, it should be understood that:
- (A) Boys and girls did as well at SAT, EXPLORE and ACT.
 - (B) In the 1990s, girls did four times better than boys at SAT.
 - (C) The 1990s SAT results showed enormous progress in girls' performance.
 - (D) SAT results remained unchanged in the 1990s compared with the 1980s.
7. From line 32 to line 36, it should be understood that the results found by Duke University:
- (A) are similar in part to John Hopkins University's.
 - (B) are quite different from John Hopkins University's.
 - (C) are not reliable at all.
 - (D) were based on smaller student samples.
8. From line 37 to line 46, it should be understood that « two decades of stagnation » refers to:
- (A) The 1980s and the 1990s.
 - (B) The 1990s and the 2000s.
 - (C) The 2000s and the 2010s.
 - (D) The 1970s and the 1980s.
9. From line 37 to line 46, it should be understood that:
- (A) Education has definitely nothing to do with girls' increasing performance in maths.
 - (B) Education could be one factor explaining girls' better performance.
 - (C) Poor education necessarily leads to bad results in maths.
 - (D) Lower interest in maths is linked to bad teaching.
10. From line 47 to line 50, it should be understood that, according to the Flynn effect, IQs all over the world have risen by:
- (A) 0.3 points since the 1980s.
 - (B) 30 points in ten years.
 - (C) 2.4 points in 8 years.
 - (D) 0.3 points in 8 years.
11. From line 51 to line 55, it should be understood that:
- (A) Better nutrition is the only cause of the Flynn effect.
 - (B) Television has harmful effects on IQ.
 - (C) Video games have no link with the IQ increase.
 - (D) New technologies may account for the rise in IQ scores.
12. From line 51 to line 55, it should be understood that:
- (A) Genes are a key element in the Flynn effect.
 - (B) There can't be any link between genetics and the Flynn effect.
 - (C) Genes partly contribute to the Flynn effect.
 - (D) Genes greatly contribute to the Flynn effect.

II. LEXIQUE

Choisissez la réponse qui vous paraît la plus appropriée en fonction du contexte.

13. « blow up » (line 3) means:
- (A) lift
 - (B) dig out
 - (C) cause to explode
 - (D) boost

14. « bold » (line 7) means:
- (A) harmless
 - (B) innovating
 - (C) nice
 - (D) courageous

15. « fray » (line 8) means:

- (A) building
- (B) battle
- (C) way
- (D) conversation

16. « sifted » (line 9) means:

- (A) changed
- (B) sent
- (C) listened to
- (D) examined carefully

17. « ferret out » (line 17) means:

- (A) find
- (B) eliminate
- (C) improve the level of
- (D) keep

18. « spanned » (line 20) means:

- (A) discarded
- (B) extended over
- (C) summed up
- (D) turned around

19. « edge out » (line 23) means:

- (A) are much stronger than
- (B) are much weaker than
- (C) defeat narrowly
- (D) avoid

20. « does not pertain » (line 24) means:

- (A) does not belong to
- (B) is not applicable
- (C) is not maintained
- (D) does not persist

21. « lopsided » (line 29) means:

- (A) equal
- (B) same-sized
- (C) similar
- (D) disproportionate

22. « chimes with » (line 33) means:

- (A) is in agreement with
- (B) is linked with
- (C) is in contradiction with
- (D) is inspired from

23. « stasis » (line 41) means:

- (A) short period
- (B) long period
- (C) stagnation period
- (D) result

24. « phasing out » (line 53) means:

- (A) introduction
- (B) gradual ban
- (C) mixture
- (D) increase

III. COMPETENCE GRAMMATICALE

Parmi les quatre phrases proposées, choisissez celle qui est grammaticalement correcte.

25.

- (A) Teachers ought encourage girls to study maths.
- (B) Teachers ought to encouraging girls to study maths.
- (C) Teachers ought to encourage girls to study maths.
- (D) Teachers ought to encourage girls study maths.

26.

- (A) Far less girls than boys are interested in it.
- (B) Much less girls than boys are interested in it.
- (C) Far fewer girls than boys are interested in it.
- (D) More fewer girls than boys are interested in it.

- 27.**
(A) In spite that they work hard, they don't succeed.
(B) In spite they work hard, they don't succeed.
(C) Though they work hard, they don't succeed.
(D) Although that they don't work hard, they don't succeed.

- 28.**
(A) Girls used to being poor at maths.
(B) Girls were used to be poor at maths.
(C) Girls used to be poor at maths.
(D) Girls were used being poor at maths.

- 29.**
(A) It is all more true as many studies came up with the same results.
(B) It is all the more true as many studies came up with the same results.
(C) It is all more true than many studies came up with the same results.
(D) It is all the more true than many studies came up with the same results.

- 30.**
(A) Both of two tests showed the same results.
(B) Both tests showed the same results.
(C) The both tests showed the same results.
(D) The both of the tests showed the same results.

- 31.**
(A) Boys are told being keener on it.
(B) Boys are said to be keener on it.
(C) Boys are said being keener on it.
(D) Boys are told be keener on it.

- 32.**
(A) Maths is one of the more difficult subjects.
(B) Maths is one most of the difficult subjects.
(C) Maths is one of most difficult subjects.
(D) Maths is one of the most difficult subjects.

Parmi les quatre solutions proposées, choisissez, pour chacun des énoncés lacunaires suivants, celle qui vous paraît le compléter correctement.

- 33.** Researchers ... on the project for so long!
(A) have been working
(B) work
(C) are working
(D) are being working

- 34.** They keep on ... their results.
(A) improve
(B) to improve
(C) improving
(D) to improving

- 35.** They put forward
(A) many hypotheses
(B) many hypothesises
(C) many hypothesis
(D) many hypothese

- 36.** They had better ... their teachers.
(A) to listen to
(B) listening
(C) listen
(D) to listening

- 37.** It is ... study.
(A) an 80-year-long
(B) an 80-years-long
(C) a 80-year-long
(D) a 80-years-long

- 38.** When the researchers ... their study, we'll be better informed.
(A) will complete
(B) have completed
(C) completed
(D) had completed

- 39.** Girls are getting ... results.
(A) more and more good
(B) the more and the more good
(C) better and better
(D) the better and the better

Fin de l'énoncé.

