

© International Baccalaureate Organization 2025

All rights reserved. No part of this product may be reproduced in any form or by any electronic or mechanical means, including information storage and retrieval systems, without the prior written permission from the IB. Additionally, the license tied with this product prohibits use of any selected files or extracts from this product. Use by third parties, including but not limited to publishers, private teachers, tutoring or study services, preparatory schools, vendors operating curriculum mapping services or teacher resource digital platforms and app developers, whether fee-covered or not, is prohibited and is a criminal offense.

More information on how to request written permission in the form of a license can be obtained from <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

© Organisation du Baccalauréat International 2025

Tous droits réservés. Aucune partie de ce produit ne peut être reproduite sous quelque forme ni par quelque moyen que ce soit, électronique ou mécanique, y compris des systèmes de stockage et de récupération d'informations, sans l'autorisation écrite préalable de l'IB. De plus, la licence associée à ce produit interdit toute utilisation de tout fichier ou extrait sélectionné dans ce produit. L'utilisation par des tiers, y compris, sans toutefois s'y limiter, des éditeurs, des professeurs particuliers, des services de tutorat ou d'aide aux études, des établissements de préparation à l'enseignement supérieur, des fournisseurs de services de planification des programmes d'études, des gestionnaires de plateformes pédagogiques en ligne, et des développeurs d'applications, moyennant paiement ou non, est interdite et constitue une infraction pénale.

Pour plus d'informations sur la procédure à suivre pour obtenir une autorisation écrite sous la forme d'une licence, rendez-vous à l'adresse <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

© Organización del Bachillerato Internacional, 2025

Todos los derechos reservados. No se podrá reproducir ninguna parte de este producto de ninguna forma ni por ningún medio electrónico o mecánico, incluidos los sistemas de almacenamiento y recuperación de información, sin la previa autorización por escrito del IB. Además, la licencia vinculada a este producto prohíbe el uso de todo archivo o fragmento seleccionado de este producto. El uso por parte de terceros —lo que incluye, a título enunciativo, editoriales, profesores particulares, servicios de apoyo académico o ayuda para el estudio, colegios preparatorios, desarrolladores de aplicaciones y entidades que presten servicios de planificación curricular u ofrezcan recursos para docentes mediante plataformas digitales—, ya sea incluido en tasas o no, está prohibido y constituye un delito.

En este enlace encontrará más información sobre cómo solicitar una autorización por escrito en forma de licencia: <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

# Sports, exercise and health science

## Standard level

### Paper 1

29 April 2025

Zone A afternoon | Zone B afternoon | Zone C afternoon

45 minutes

---

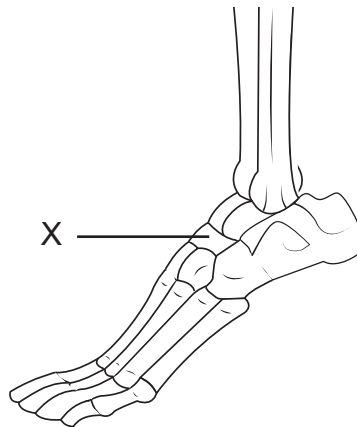
#### Instructions to candidates

- Do not open this examination paper until instructed to do so.
- Answer all the questions.
- For each question, choose the answer you consider to be the best and indicate your choice on the answer sheet provided.
- The maximum mark for this examination paper is **[30 marks]**.

1. Which option relates to the axial skeleton?

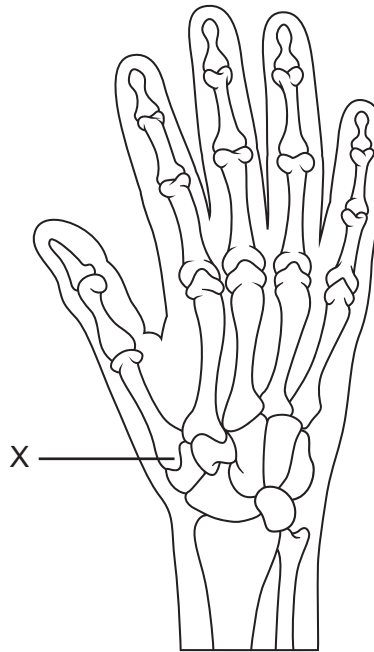
	<b>Role</b>	<b>Body part A</b>	<b>Body part B</b>
A.	Protection	Ilium	Sternum
B.	Movement	Patella	Thoracic vertebrae
C.	Attachment	Ribs	Sacrum
D.	Support	Femur	Lumbar vertebrae

2. What type of bone is X?

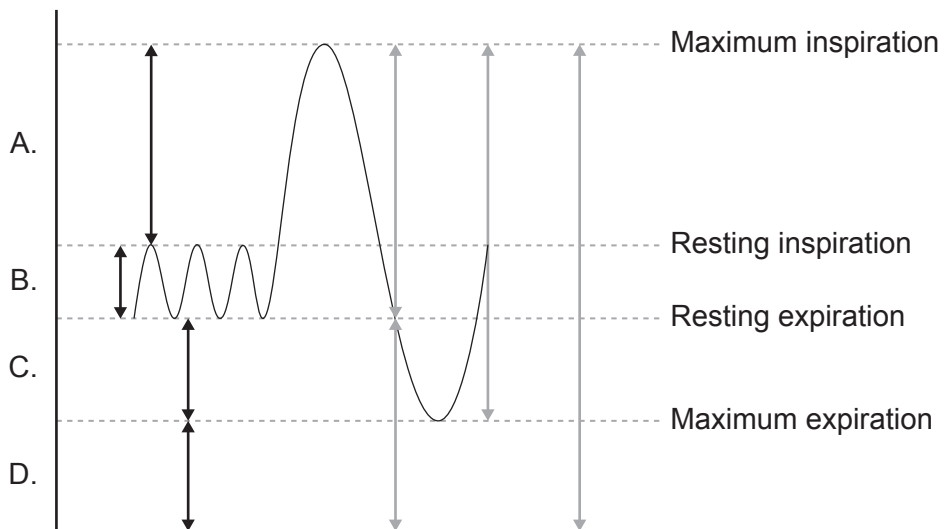


- A. Long
- B. Short
- C. Flat
- D. Irregular

3. The diagram shows the skeletal structure of the hand. What type of synovial joint is found at X?



- A. Gliding
  - B. Hinge
  - C. Saddle
  - D. Pivot
4. Which labelled segment represents expiratory reserve volume (ERV)?



5. What causes maximal inspiration?

A.	Diaphragm relaxation	Accessory muscle contraction
B.	Diaphragm contraction	Accessory muscle contraction
C.	Diaphragm relaxation	Accessory muscle relaxation
D.	Diaphragm contraction	Accessory muscle relaxation

6. Which sequence of excitation of the heart muscle results in ventricular contraction?

- A. AV node → SA node → bundle of His → Purkinje fibres
- B. AV node → Purkinje fibres → SA node → bundle of His
- C. SA node → Purkinje fibres → AV node → bundle of His
- D. SA node → AV node → bundle of His → Purkinje fibres

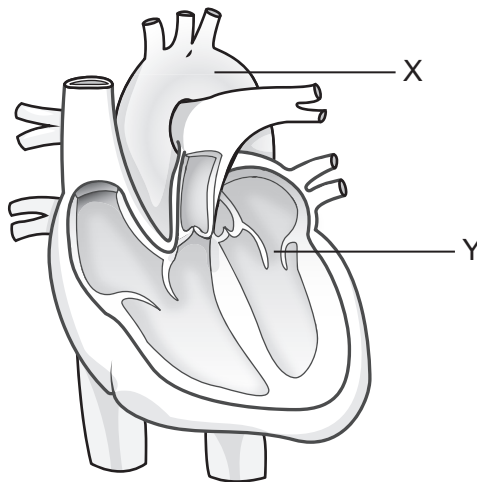
7. Which cardiovascular adaptation to endurance exercise training affects the maximal cardiac output of an athlete?

A.	Increased stroke volume	Maintains maximal heart rate
B.	Increased stroke volume	Decreases maximal heart rate
C.	Decreased stroke volume	Increases maximal heart rate
D.	Decreased stroke volume	Decreases maximal heart rate

8. What is the definition of systolic blood pressure?

- A. The force exerted by the blood on arterial walls during ventricular relaxation
- B. The force exerted by the blood on venous walls during ventricular contraction
- C. The force exerted by blood on arterial walls during ventricular contraction
- D. The force exerted by blood on venous walls during ventricular relaxation

9. The diagram shows the human heart. What structures are X and Y?



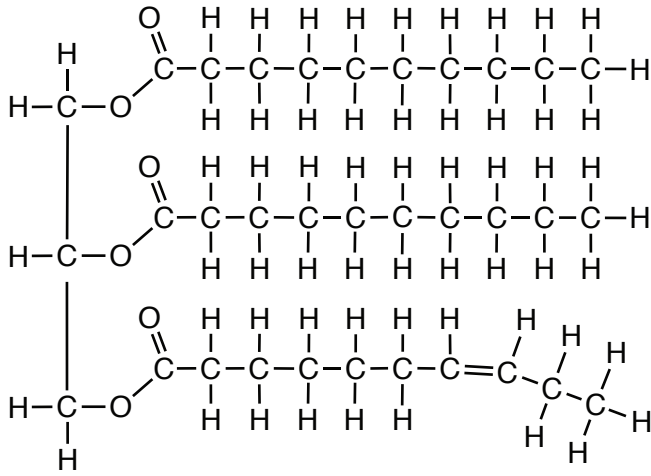
	X	Y
A.	Aorta	Bicuspid valve
B.	Pulmonary artery	Bicuspid valve
C.	Pulmonary artery	Tricuspid valve
D.	Aorta	Tricuspid valve

10. What is the approximate energy contribution of 100g of protein?

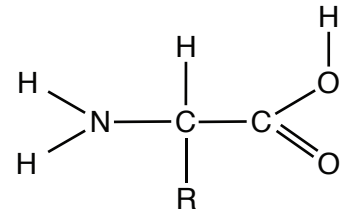
- A. 1720 kJ
- B. 1760 kJ
- C. 4000 kJ
- D. 4200 kJ

11. Which of the following is a glucose molecule?

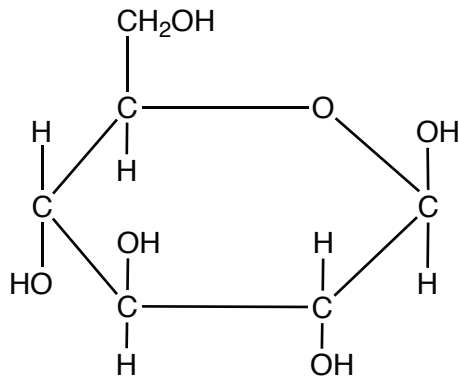
A.



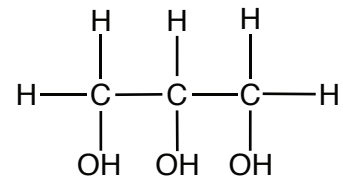
B.



C.



D.

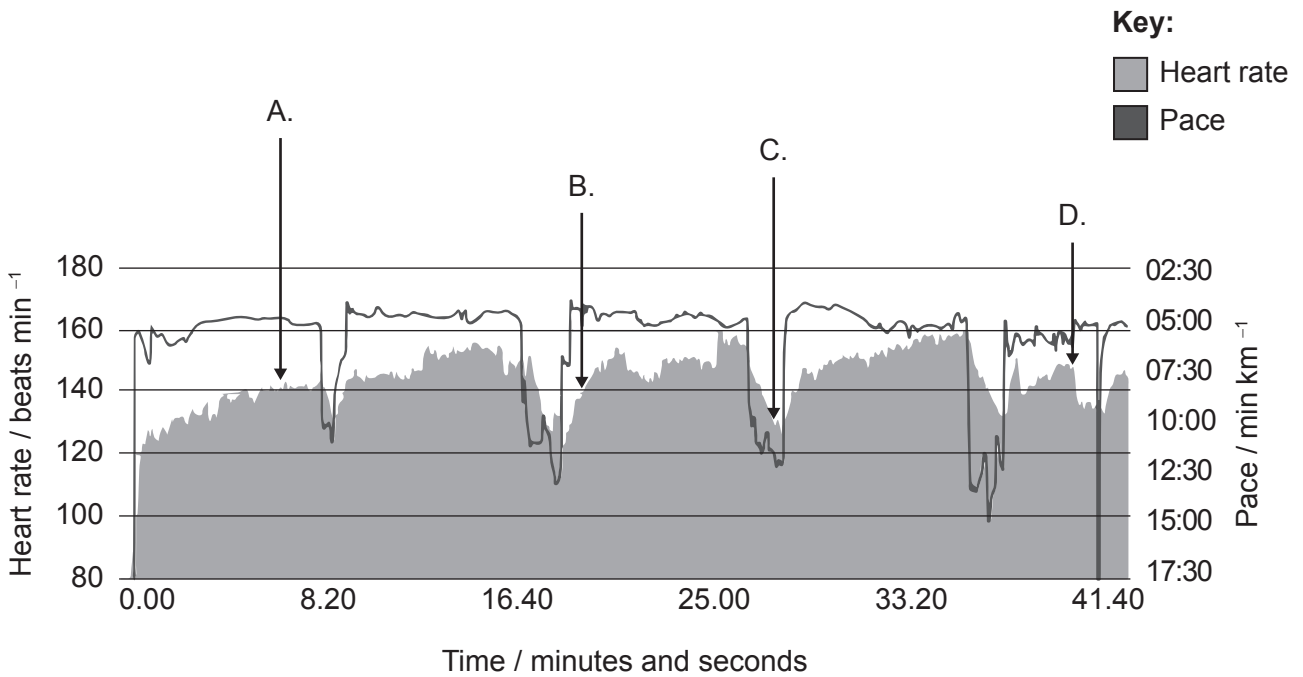


12. Which are the major glycogen storage sites?

- A. Muscle and liver
- B. Muscle and adipose tissue
- C. Skin and liver
- D. Skin and adipose tissue

13. Which is the predominant energy system used when performing a high jump?
- A. ATP-CP
  - B. Lactic acid
  - C. Aerobic glycolysis
  - D. Aerobic lipolysis

14. The graph displays data obtained from a runner's smartwatch. Which label shows an example of an oxygen deficit?

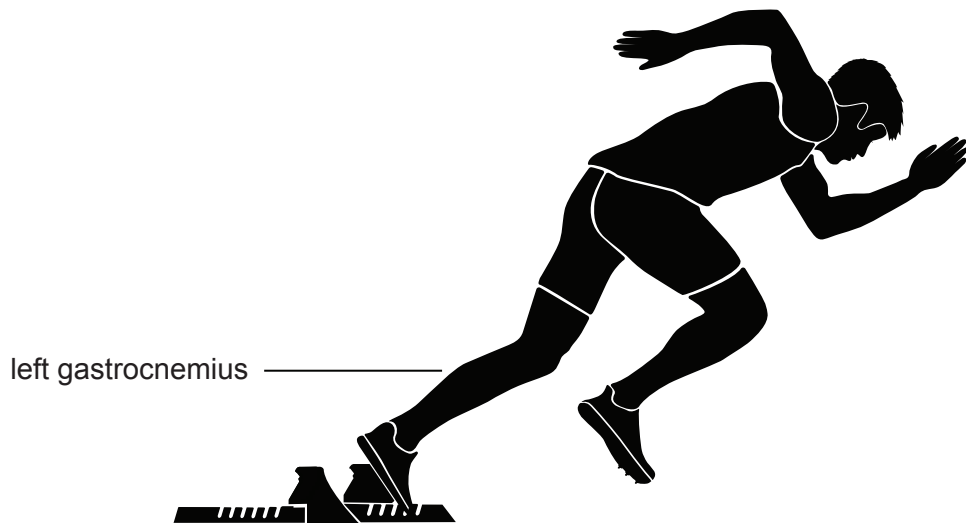


15. Which decrease during muscle contraction?
- I. H zone
  - II. A band
  - III. Distance between Z lines
- A. I and II only
  - B. I and III only
  - C. II and III only
  - D. I, II and III

16. Which option best describes the structure of the predominant muscle fibres in the quadriceps of a marathon runner?

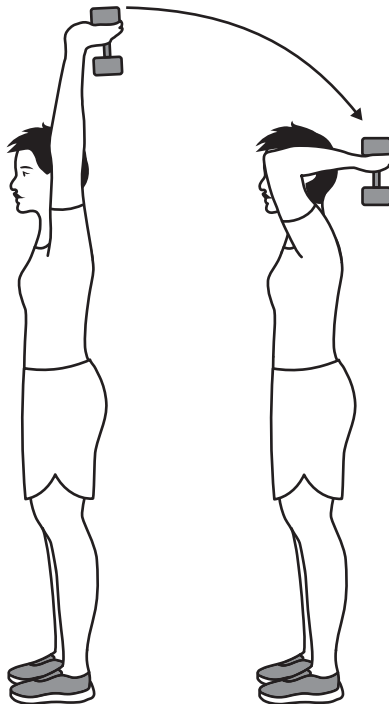
	Colour	Capillary density	Myoglobin content
A.	Red	Low	Low
B.	White	Low	Low
C.	White	High	High
D.	Red	High	High

17. Which option states the types of contraction for the sprinter's left gastrocnemius as they push out of the blocks?



- A. Isokinetic, eccentric
- B. Isotonic, concentric
- C. Isokinetic, concentric
- D. Isotonic, eccentric

18. A neural impulse travels along the axon. Which structure does the nerve impulse travel through next?
- A. Cell body
  - B. Synapse
  - C. Dendrite
  - D. Motor end plate
19. Which is the fulcrum during the lowering phase of the triceps extension exercise?



- A. Elbow
- B. Radius
- C. Shoulder
- D. Hands

20. The image shows the start of a sailing race.



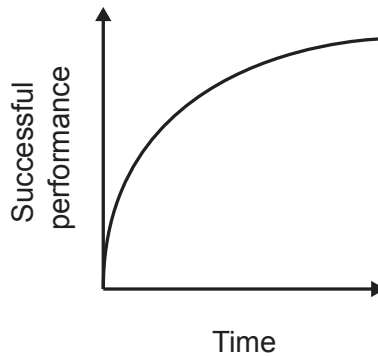
Which motor skill classifications apply to the sailors?

A.	Gross	Open	Externally paced	Interactive
B.	Gross	Closed	Externally paced	Coactive
C.	Fine	Closed	Internally paced	Individual
D.	Fine	Open	Internally paced	Coactive

21. What is the relationship between skill, ability and technique?

- A. skill = ability × technique
- B. skill = ability – technique
- C. skill = ability + technique
- D. skill = ability ÷ technique

22. Which is a characteristic of short-term memory?
- A. Information is lost within 0.5 seconds.
  - B. An unlimited capacity for information.
  - C. Information does not need to be rehearsed.
  - D. A capacity of  $7 \pm 2$  pieces of information.
23. Which represents the use of bright yellow balls in tennis to aid the signal-detection process?
- A. Decrease background noise
  - B. Increase intensity of stimulus
  - C. Provide early signal detection
  - D. Improve efficiency of sense organs
24. Which type of learning curve does the graph represent?



- A. Positive acceleration
- B. Negative acceleration
- C. Linear
- D. Plateau

25. Which skill characteristics lead a coach to use whole presentation?
- I. Is highly integrated
  - II. Is very complex
  - III. Is not meaningful in parts
- A. I and II only
  - B. I and III only
  - C. II and III only
  - D. I, II and III
26. What is a coefficient of variation?
- A. The ratio of the standard deviation to the mean expressed as a percentage
  - B. A graphical representation of the spread around the mean
  - C. The significance of the data expressed as a decimal
  - D. A value representing the correlation between two sets of data
27. What percentage of the population within a normal distribution does  $\pm 2$  standard deviations include?
- A. 68%
  - B. 75%
  - C. 95%
  - D. 99%
28. Which terms apply when using the multistage fitness test to assess the muscular power of a 100m sprinter?
- A. Reliable and not valid
  - B. Not reliable and not valid
  - C. Reliable and valid
  - D. Not reliable and valid

- 29.** What is the purpose of performing an active cool down and stretching at the end of a training session?
- I. To minimize delayed onset muscle soreness (DOMS)
  - II. To reduce heart rate gradually
  - III. To promote lactate removal
- A. I and II only
  - B. I and III only
  - C. II and III only
  - D. I, II and III
- 30.** Which measure of exercise intensity is specifically used for children?
- A. The Karvonen method
  - B. OMNI rate of perceived exertion
  - C. Borg rate of perceived exertion
  - D. CERT rate of perceived exertion
-

**Disclaimer:**

Content used in IB assessments is taken from authentic, third-party sources. The views expressed within them belong to their individual authors and/or publishers and do not necessarily reflect the views of the IB.

**References:**

3. Rendixalextian, 2016. *Bones of the hand and wrist anatomy – stock illustration*. [image online] Available at: <https://www.gettyimages.co.uk/detail/illustration/bones-of-the-hand-and-wrist-anatomy-royalty-free-illustration/533347150?phrase=hand+bones&adppopup=true> [Accessed 5 July 2024]. Source adapted.
4. Lutfi, M.F., 2017. The physiological basis and clinical significance of lung volume measurements. *Multidisciplinary Respiratory Medicine* 12,3. [online] Available at: <https://mrmjournal.biomedcentral.com/articles/10.1186/s40248-017-0084-5> [Accessed 5 July 2024]. Source adapted.
17. Sportpoint, 2017. *Start of sprinter runner – stock illustration*. [image online] Available at: <https://www.gettyimages.co.uk/detail/illustration/start-of-sprinter-runner-royalty-free-illustration/648335974?phrase=sprinter+blocks&adppopup=true> [Accessed 5 July 2024]. Source adapted.
20. Mbbirdy, 2024. *Sailboats on regatta - stock photo*. [image online] Available at: <https://www.gettyimages.co.uk/detail/photo/sailboats-on-regatta-royalty-free-image/1899069965?adppopup=true> [Accessed 5 July 2024]. Source adapted.