

# Design & Technology

# Woods

## Materials required for questions

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- Pencil
- Rubber
- Calculator

## Instructions

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- Use black ink or ball-point pen
- Try answer all questions
- Use the space provided to answer questions
- Calculators can be used if necessary
- For the multiple choice questions, circle your answer

## Advice

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- Marks for each question are in brackets
- Read each question fully
- Try to answer every question
- Don't spend too much time on one question

# Good luck!

**Q1.** Which hardwood has very few knots?

- A** Mahogany
- B** Ash
- C** Beech

**Q2.** What is one factor that makes hardwoods more expensive than softwoods?

- A** Hardwoods need more care
- B** Hardwoods have higher density
- C** Hardwoods grow slower

**Q3.** Which hardwood is good for steam bending?

- A** Ash
- B** Oak
- C** Beech

**Q4.** What manmade board has perpendicular layers?

- A** Chipboard
- B** Plywood
- C** MDF

**Q5.** Which softwood stains well?

- A** Spruce
- B** Pine
- C** Larch

**Q6.** Chipboard can be toxic/hard to recycle for what reason?

- A** The adhesives in it
- B** Its recycled wood
- C** It has a very high density

**Q7.** Plywood is used in many school workshops for what reason?

- A** More durable than natural timber
- B** It's cheap
- C** Finishes well

**Q8.** What is the main advantage of manufactured boards over natural timbers?

- A** Much cheaper than natural timber
- B** Made in any shape/size/thickness
- C** Much stronger than natural timber

**Q9.** MDF is going to be used to make a picture frame backing board.

**(a)** Explain the environmental advantage of using MDF instead of pine to make a wall clock? **(2 marks)**

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**(b)** MDF comes in 61cm × 122cm sheets.

Determine the number of 400mm x 400mm squares that can be cut from the given sheet. **(4 marks)**

**Q10.** A CNC router was used to create the base of a chess board from a single bit of oak.

Explain three mechanical properties of oak that make it a good choice for the construction of the chess board **(6 marks)**

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**Q11.** The handle of a kitchen knife has been made from the hardwood mahogany

Explain two benefits of using mahogany instead of pine for the kitchen knife handle **(4 marks)**

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**Q12.** Plywood is to be used to make a phone stand.

What are two advantages, aside from cost, of using plywood instead of solid wood for the production of the phone stand **(4 marks)**

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## Answers

**Q1.** A

**Q2.** C

**Q3.** A

**Q4.** B

**Q5.** A

**Q6.** A

**Q7.** B

**Q8.** B

**Q9a.**

- Because MDF is created with waste materials (1), there is no need for the leftovers to be disposed of or dumped in a landfill (1).
- Using MDF will reduce the amount of natural timber being cut down (1), therefore pine as a natural resource will last longer/be put to better use (1).

**Q9b.**

400 mm = 40 cm (1)

61 = 1 whole cuts (1)

122 = 3 whole cuts (1)

1 × 3 = 3 whole cuts (1)

**Q10.**

- Strong (1) to withstand splitting (1)
- Tough (1) can absorb impacts (1)
- Hard (1) so won't wear away during use (1)
- Dense (1) allowing for high-definition machining (1)
- Stable (1) to prevent warping (1)
- Heavy (1) preventing movement when in use (1)
- Durable (1) so will be long-lasting (1)

**Q11.**

- Mahogany is less likely to splinter (1), as it is more dense than pine (1).
- Mahogany is more durable (1), meaning it is less likely to break when used (1).
- Mahogany is knot free (1), so there won't be any vulnerable weak areas (1).

**Q12.**

- Plywood resists warping (1) since it is a dimensionally stable material (1).

- Because plywood has uniform strength (1), tiny details are less prone to come loose (1).
- Plywood can be knot free (1), so there won't be any vulnerable weak areas (1).