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# Design & Technology
# Eduqas GCSE

# Textiles: forces, stresses, reinforcing and stiffening

## Materials required for questions

- Pencil
- Rubber
- Calculator

## Instructions

- 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

- 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 force pulls a material apart and stretches it along its length?

**A** Compression

**B** Tension

**C** Torsion

**Q2**. Why is ripstop nylon used for tents?

**A** Thicker grid yarns stop tears spreading

**B** It has a waterproof wax coating

**C** It is very stretchy

**Q3**. Which fabric construction has the highest elasticity?

**A** Plain weave

**B** Weft knit

**C** Felt

**Q4**. Which seam is much stronger than a plain seam and is used on jeans?

**A** A tacked seam

**B** A seam with long stitches

**C** A flat fell seam

**Q5**. Why is a satin weave less durable than a plain weave?

**A** Its floats snag

**B** It ladders

**C** It is held together with adhesive

**Q6**. Why is fusible interfacing ironed onto collars, cuffs and waistbands?

**A** To add stretch

**B** To make them waterproof

**C** To stiffen and support them

**Q7**. A fancy dress hat is held on by an elasticated strap. State the type of force the elasticated strap is subjected to when it is stretched around the chin. **(1 mark)**

**Q8**. A deck chair seat is made from a woven fabric, which makes it strong. Describe how the construction of a woven fabric makes it strong. **(1 mark)**

**Q9**. A table lamp has a lampshade covered in linen fabric. Explain why the fabric on the lampshade is held in tension. **(2 marks)**

**Q10**. A family picnic bag is made from a polyamide (nylon) fabric. Explain one benefit of manufacturing the picnic bag from a polyamide fabric. **(2 marks)**

**Q11**. A skirt has an interfaced waistband. A denim shirt has a placket (the strip down the front that holds the buttons and buttonholes), which is stiffened with interfacing.

**Q11a.** Explain why interfacing is used in clothing construction. **(2 marks)**

**Q11b.** Use notes and sketches to show how the shirt placket would be stiffened with interfacing by fusing. **(4 marks)**

**Q12**. A t-shirt is sewn using flat fell seams. Explain why flat fell seams are used in the construction of the t-shirt. **(2 marks)**

**Q13**. Precise sewing is important when producing patchwork fabric. Use words and sketches to show how two square patchwork shapes would be sewn together precisely and securely. **(4 marks)**

**Q14**. Each page of a fabric book is made from two layers of fabric. Use notes and sketches to show how the two layers would be joined to make a page with no raw edges. **(4 marks)**

**Q15**. A dog coat has an outer layer made from polyester fabric and a quilted panel. Use notes and sketches to show how a panel of fabric should be quilted. **(4 marks)**

**Q16**. The fabric of a wall hanging plant holder has a laminated finish. Explain two benefits of using a laminated finish on the fabric of the plant holder. **(6 marks)**

**Q17**. A pair of swim shorts is made from a blended fabric of nylon and elastane. Explain two quality control checks that would be carried out on the swim shorts before they are allowed to leave the factory. **(4 marks)**

**Answers**

**Q1**. B
**Q2**. A
**Q3**. B
**Q4**. C
**Q5**. A
**Q6**. C

**Q7.**

Tension or tensile force (1).

**Q8.**

The under and over (warp and weft) construction of the yarns reinforces the threads (1). Do not award “strong” on its own, as this is given in the question.

**Q9.**

An effect of the tension (1) and a linked justification (1). For example:

- The tension lets the fabric hold its shape (1) so it keeps its appearance (1)
- The tension holds the fabric taut (1), so it does not touch the light bulb and is safe to use (1)
- The tension stretches the fabric (1) so the light shines through evenly (1)
- The tension gives a smooth outer surface (1), which is easier to wipe clean (1)

**Q10.**

A benefit (1) and a linked justification (1). For example:

- It has high tensile strength (1), so it will not stretch when carrying a lot of food (1)
- It is hydrophobic or water resistant (1), so it will not absorb water at a park or on a beach and can be wiped clean (1)

**Q11a.**

Up to 2 marks for a clear explanation. For example: interfacing is attached to the main fabric to give it support or structure (1); it stops the waistband creasing and losing its shape (1).

**Q11b.**

Cap at 3 marks if there are no sketches, or sketches with no notes. One mark for each:

- Cut the interfacing to the right shape and size using the pattern piece (1)
- Place the main fabric wrong side up on the ironing board (1)
- Place the fusible interfacing on top, adhesive side down onto the wrong side of the main fabric (1)
- Cover with a pressing cloth and press with the iron (1)
- Trim any excess interfacing (1)

**Q12.**

Up to 2 marks for a clear explanation. For example:

- The seam allowances are enclosed within the seam, leaving no raw edges (2)
- It is the most durable type of seam (1), so the t-shirt can withstand a lot of wear and washing (1)
- It has two rows of stitching, which increases durability (1), and can be sewn in a contrasting thread to improve the appearance (1)

**Q13.**

Up to 4 marks for a clear understanding of the stages. A maximum of 2 marks for clear sketches if the written explanation is missing. For example:

- Place the squares together, right sides facing (1)
- Mark a 1.5 cm seam allowance (1)
- Stitch the squares together on the 1.5 cm seam allowance (1) using a running or straight stitch (1)
- Secure the stitching by reverse stitching or a machine knot (1)
- Overlock the seams (1)
- Press the seams to one side or open (1)

**Q14.**

Cap at 3 marks if there are no sketches, or sketches with no notes. Do not accept answers about bonding or making a four page booklet. One mark for each:

- Pin the right sides of the fabric together (1)
- Hold together with tacking (1)
- Machine sew or overlock around three edges, leaving a gap (1)
- Clip the corners and trim the seam allowance (1)
- Turn the fabric right side out (1)
- Press (1)
- Stitch up the gap by hand or machine (1)

**Q15.**

Cap at 3 marks if there are no sketches, or sketches with no notes. One mark for each:

- Place the fabric on top of the wadding, or sandwich the wadding between layers of fabric (1)
- Pin, tack or baste the layers together to hold them in place (1)
- Machine or hand stitch the pattern through all the layers (1)
- Rows of stitching must be evenly spaced, sized and neat (1)
- Always work outwards from the centre of the fabric (1)

**Q16.**

Two benefits (1 mark each), each with two linked justifications (1) + (1). Do not accept anything about a smoother surface. For example:

- Better water resistance (1), so the fabric does not soak up water (1), which stops it rotting or being damaged (1)
- Greater tensile strength (1), so the fabric will not rip (1), which makes the product last longer (1)
- Better durability (1), so the holder stays looking new (1), which keeps its appearance for longer (1)
- Better stain resistance (1), so it does not get dirty and is easy to wipe clean (1), which protects it from discolouring (1)

**Q17.**

Two checks (1 mark each), each with a linked justification (1 mark each). For example:

- The swim shorts are stretch tested (1) to make sure they return to their original size without damage (1)
- The stitching is tested (1) to make sure it stretches with the fabric and does not break (1)
- The size of the swim shorts is checked (1) to make sure they have been sewn within tolerance (1)