Irlandesas Madrid
FUNDACIÓN EDUCATIVA MARY WARD

TECHNOLOGY

2ND CHANCE PORTFOLIO

2ºESO

PART 1: THE TECHNOLOGICAL PROCESS.

1. **Complete the following table:**

Object	Need it meets	Object with the same function
Telephone		
Computer		
Watch		
Car		

2. **Write three conditions that each of the following objects must meet to function correctly:**

   a) A camping tent:

   b) A bungee jumping rope:

   c) A helmet for protection on a construction site:

3. **Draw and answer:**

   a) Draw a sketch of a sneaker and indicate its parts.

   b) What qualities must it have to be functional?

   c) Indicate the materials you would use for its manufacturing.

4. **What is technology?**
5. **Cite some consequences of the misuse of technology.**

6. **What is the technological process?**

7. **Write the different phases of the technological process.**

8. **What is a technical project? Name the documents that are grouped within the technical project.**

   Before construction:

   During construction:

   After construction:

PART 2: MATERIALS.

1. **Classify the following materials according to their corresponding group:**

   •copper • concrete • tiles • methacrylate • plywood • cardboard • wool • marble • PVC • titanium • porcelain • cotton • expanded polystyrene • optical fiber • glass • silicone • chalk • modeling clay • lycra • coal

Wood	Metals	Plastics	Stone	Ceramics/Glass	Textiles

2. **Indicate two objects made, in whole or in part, with the following groups of materials:**
   - **Woods:**
   - **Metals:**
   - **Plastics:**
   - **Stone-based materials:**
   - **Ceramics and glass:**
   - **Textiles:**

3. **When selecting a material for the construction of objects, indicate the advantages and**

disadvantages of its use:

MATERIAL	ADVANTAGES	DISADVANTAGES
Plastic		
Wood		
Metals		

4. Select the most suitable products for the properties indicated:

- **Funcionamiento por magnetismo:**
  ☐ teléfono ☐ linterna ☐ secador ☐ timbre ☐ moto
- **Resistencia a la tracción, compresión, flexión y torsión:**
  ☐ destornillador ☐ caña de pescar ☐ taburete ☐ cable de tendido eléctrico
  ☐ llave ☐ medias ☐ acero
- **Tenacidad:**
  ☐ loza ☐ plástico ☐ aluminio ☐ corcho ☐ acero ☐ vidrio
- **Dureza:**
  ☐ porcelana ☐ cristal ☐ plomo ☐ uralita ☐ diamante
- **Elasticidad:**
  ☐ arcilla ☐ goma ☐ algodón ☐ cobre ☐ chicle
- **Formación de hilos:**
  ☐ aluminio ☐ lana ☐ cobre ☐ acero ☐ oro
- **Capacidad de transmitir el calor:**
  ☐ plata ☐ hierro ☐ plástico ☐ madera ☐ mármol
- **Conductividad eléctrica:**
  ☐ vidrio ☐ cobre ☐ plástico ☐ cerámica ☐ pizarra ☐ agua
- **Densidad:**
  ☐ aluminio ☐ acero ☐ plástico ☐ corcho ☐ plomo ☐ titanio
- **Dejar pasar los rayos de luz:**
  ☐ cerámica ☐ seda ☐ pecera ☐ espejo ☐ gafas

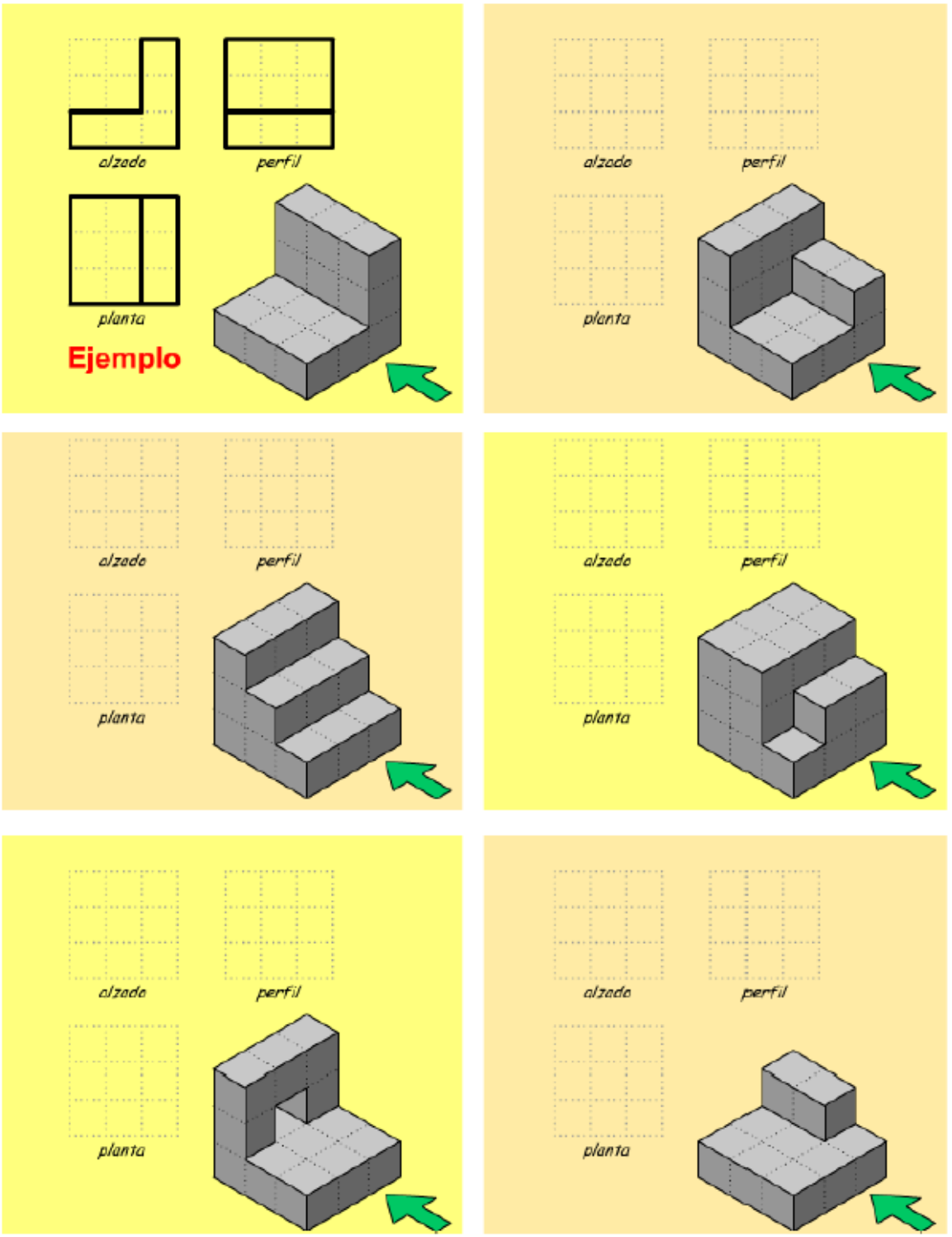
5. Indicate which characteristic is the opposite of the one shown.

MATERIAL CHARACTERISTIC	OPPOSITE CHARACTERISTIC
Hard	
Lightweight	

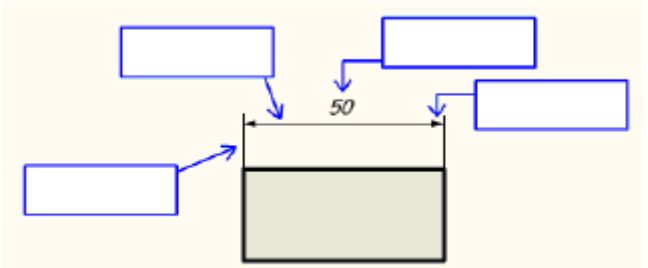
Tough	
Electrical insulator	
Rigid	
Elastic	
Opaque	
Oxidizable	

PART 3: GRAPHIC EXPRESSION.

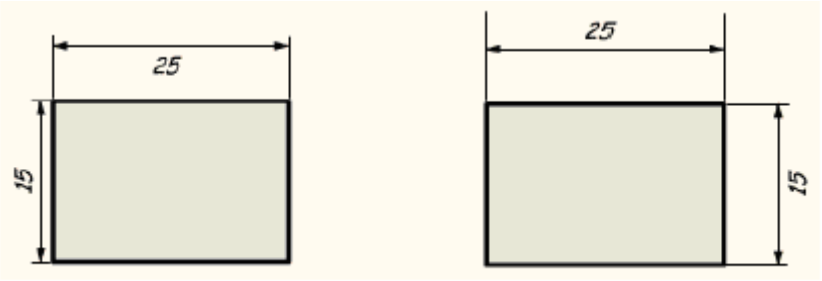
1. **Order the following pencil lead hardnesses, from hardest to softest:** B HB 2H H 2B
2. **Draw the position that the set square and triangle should adopt to draw:**
    - Parallel lines
    - Perpendicular lines to the previous ones
3. **How many times must an A0 sheet of paper be divided to get an A4?**
4. **Indicate the differences between a sketch and a draft.**
5. **Draw the views of the following pieces: (Image placeholder for the drawings)**



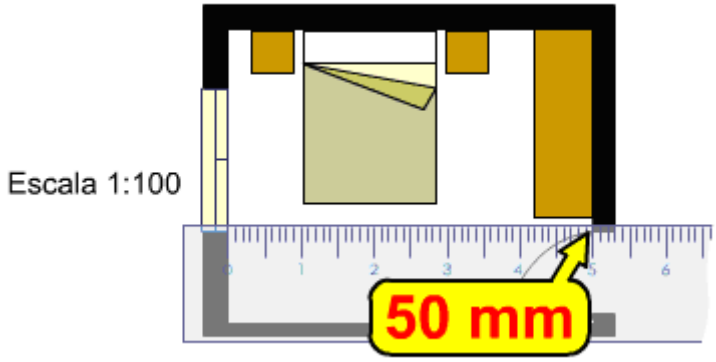
6. Name the dimensioning elements.



7. **These two drawings have dimensioning errors, explain what they are: (Image placeholder for the drawings)**



8. **This room, drawn at a 1:100 scale, measures 50mm wide in the drawing. What will the actual width of the room be?**



PART 4: MECHANISMS.

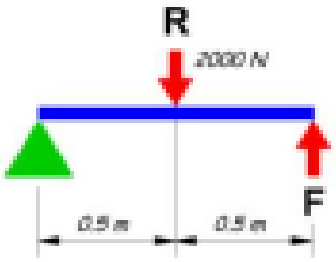
1. **What is a mechanism?**

2. **What is a pulley?**

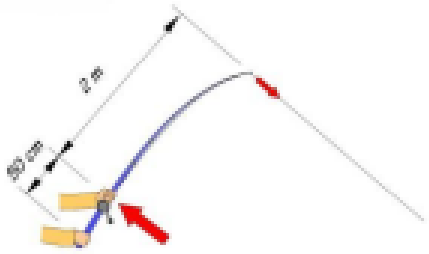
3. **What is a gear?**

4. **State the class of the following levers. Indicate on the force, the fulcrum, the effort, and the resistance (load).**

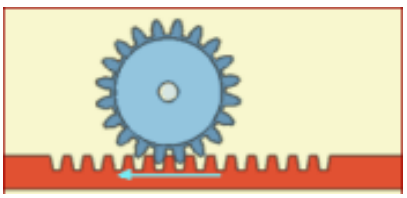
5. **Calculate the value of the force F. What type of lever is it?**

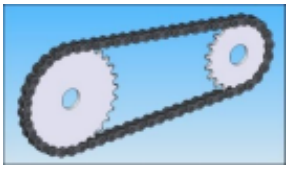


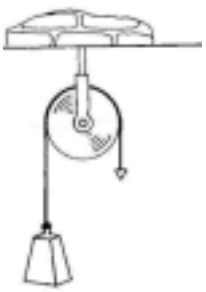
6. **A fish pulls on this fishing rod with 27 N. What force is necessary to pull it out of the water? What type of lever is it?**



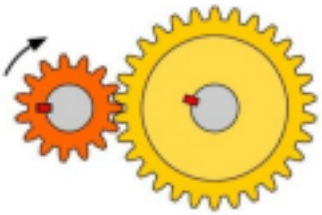
7. **Name the following mechanisms and briefly explain how they work:**



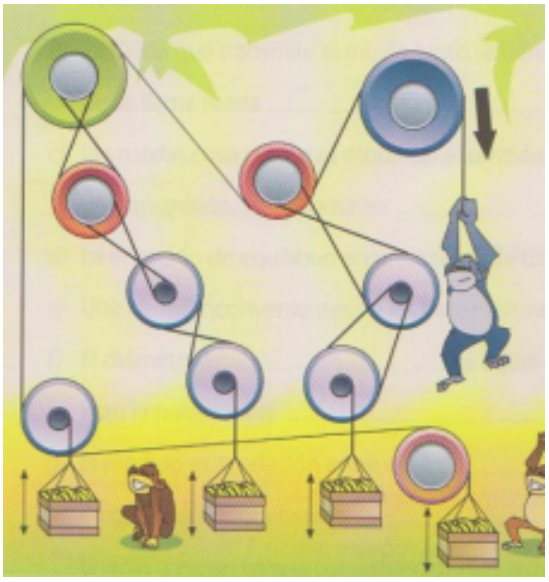




8. **In the following diagram, the driving gear is the smallest one. Is this a speed reduction or multiplication system?**



9. **Indicate the direction of rotation on all pulleys and whether the boxes are moving up or down:**



PART 5: Computational Thinking.

1. **What is an algorithm?**

2. **Write an algorithm for an everyday routine. Describe, at least, 6 different ordered steps.**

3. **Write the steps the alien needs to get to the space ship. Use the directional arrows to guide the alien.**

4. **Design a single-script Scratch program where a character can move, and simultaneously control changes to the background (scene) by using different keyboard inputs. Paste a screenshot of the algorithm**

📝 Instructions and Steps (Student Guide)

Phase 1: Setting Up the Stage and Sprite (Pre-coding)

1. New Project: Start a new Scratch project.
2. Sprite and Backdrops:
    - Choose one Sprite (character) that can move across the screen.
    - Choose three different Backdrops: one initial one (Start), and two distinct scenes (Scene A and Scene B).

Phase 2: The Main Loop and Initial Position

The character must have only one starting script that contains the main loop.

1. Script Start: Drag the when green flag clicked block (Events 🟡) to the coding area.
2. Initial Setup: Below the event block, place:
    - switch backdrop to (Start) (Looks 🟣).
    - go to x: (0) y: (0) (Motion 🔵) to center the character.

3. Control Loop: Immediately after, nest the forever block (Control 🟠). All control logic (movement and scene changes) must be placed inside this loop.

Phase 3: Movement Control (Conditionals 1 & 2)

Inside the forever loop, create the conditions for movement.

1. Right Condition: Nest an if ( ) then block (Control 🟠).
    - Sensing: Use the key (right arrow) pressed? block (Sensing 💙) as the condition.
    - Action: Inside the then section, add point in direction (90) and move (10) steps (Motion 🔵).
2. Left Condition: Nest a second separate if ( ) then block (Control 🟠).
    - Sensing: Use the key (left arrow) pressed? block (Sensing 💙).
    - Action: Inside the then section, add point in direction (-90) and move (10) steps (Motion 🔵).

Phase 4: Scene Control (Conditionals 3 & 4)

Inside the same forever loop, add the logic for changing the backdrops.

1. Scene A Condition: Nest a third separate if ( ) then block (Control 🟠).
    - Sensing: Use the key (A) pressed? block (Sensing 💙).
    - Action: Inside the then section, add switch backdrop to (Scene A) (Looks 🟣).
2. Scene B Condition: Nest a fourth separate if ( ) then block (Control 🟠).
    - Sensing: Use the key (B) pressed? block (Sensing 💙).
    - Action: Inside the then section, add switch backdrop to (Scene B) (Looks 🟣).

Once your program runs correctly, you must **take a screenshot of the entire script**