**3D Sets from 2D Drawings**

Using plans and elevations to design film sets at Pinewood Studios

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| Year Group | 10 | Subject | Maths | Employer Link | Pinewood Studios |

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| Curriculum Objective(s) | * To construct and interpret plans and elevations of 3D shapes
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| Careers Objective(s) | * To highlight the relevance of Maths to future career paths
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| Essential Skills Development | * [Creativity](https://hub.skillsbuilder.org/resources/browse/creativity/) (combining ideas), [Leadership](https://hub.skillsbuilder.org/resources/browse/leadership/) (allocating roles), Teamwork, Speaking (build these skills [here](http://skillsbuilder.org/hub))
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| Task Overview and Connection to Employer | The objective of this lesson is for students to create and interpret 2D drawings (plan view and elevation view) as the first stage in the process of designing and creating a 3D set for a film. Students will explore the process that a set designer would undertake when designing a set to be built at Pinewood Studios.  |

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| Essential Prior Learning Checklist | * Students will be able to draw plans and elevations of 3D shapes
* Students will be able to draw 3D shapes from the plan view and front/side elevation

Resources Checklist |

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| Context: Where might this task be sequenced within the learning journey?  | This lesson could be placed at the end of a Mathematics unit on Geometry & Shape.  |

Lesson Structure

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| Phases (with indicative times) | Main Activities | Key Questions | Teacher Notes (inc suggestions for support & challenge) | Resources Required |
| 1. Introduction: (10 mins) | Play Video 1: The role of the set designer is introduced to students through an introduction of Duncan, the set designer, who has worked on sets filmed at Pinewood Studios. Talk through slides 5 & 6 explaining the importance of the 2D drawings as the first stage of designing a set. Examples can be shown to students on slides 7 - 14 (incl. The video trailer of the BBC TV series ‘Banished’ to engage students and bring these sets to life) | * What does the role of a set designer involve?
* Why is it important for them to create 2D drawings before they start building a set?
* Slide 11: Ask students to interpret the plan view for the dormitory: what do the 2D shapes represent?
 | Students do not need to know the role before; but by the end of the introduction students need to understand the role of a set designer and the importance of this first stage; and how this links to Pinewood Studios.Support: facilitate a whole class discussion to support students understand the role and the importance of the 2D plan and elevation views. A ‘think.pair.share’ task can also be used when interpreting slide 11. Challenge: Ask students key questions prior to showing them the video and encourage students to work individually for key questions.  | Slides 4 - 14  |
| 2. Exploring the Context (10 mins) | Walk students through an example of the process from brief to 3D model. Stop at each stage and ask students key questions to get them to engage in the thought processes required and to work through the sequence of steps required.  | * Slide 17: To make sure we meet the brief, what would the designer need to include on this set? What 2D shapes would we use to represent these items on a plan view? And for the elevation?
* Slide 22: Looking at the plan view and elevations, what 2D shapes are highlighted?
* Slide 22: Looking at the plan view and elevations, what 3D do these represent?
* Slide 25: What additional features have been added in to make sure the set meets the brief?
 | This section should break down and scaffold the students through the process from being given the brief to creating a 3D model for a set. Students should be engaging throughout this section; being asked key questions throughout to check understanding and address any misconceptions. Support: facilitate a whole class discussion to support students and the use of ‘think.pair.share’ to encourage participation from all students Challenge: students could be asked to create to ‘sketch’ a possible plan view given the brief before being shown the example on slide 18; and asked to draw the 3D shapes from slide 22 before being shown slides 23 and 24. | Slides 16 - 25  |
| 3. Setting the Brief (5 mins) | Play Video 3: Students will be welcomed into the design team and introduced to the design brief. Talk students through the 3 stages of the task; and what each pair will be working on at each point.  | * To meet the design brief for each set; what key objects do we need to include?
* How will we represent the objects in stage 1 and 2 (will these be 2D or 3D?)
* How will we represent the objects in stage 3?
 | Students need to be organised into groups of at least 6. Within each group they will need to be split into 3 sub-groups, ideally pairs: Pair A, Pair B and Pair C. Support: Re-read the brief and facilitate a class discussion about key components to consider before starting stage 1. State that there will be 3 stages to the task with clear time limits. Challenge: For stage 3, this could be extended by asking students to build a 3D model of the set. *Recommended to provide students with nets to support this.*  | Slides 27 - 32 Print the design briefs to students to refer through to support with each stage  |
| 4. Working on the Task (30 mins) | Stage 1: Using the brief, each pair will create the plan view of a set (1 set each). Each pair will pass their plan view to the next pair in their group.Stage 2: Using the brief, and plan view each pair will create the elevation view of this set (1 set each). Each pair will pass the plan view; and their elevation view to the next pair in their group.Stage 3: Using the brief; the plan view; and the elevations each pair will draw a 3D sketch of this set (1 set each). | * Why is it important to be accurate for each stage?
* Why is time-keeping important for this task?
* Why is it important to re-read the brief for each stage?
 | Students will need to work to strict time limits for this task to ensure their part of the task is completed and ready for the next pair. Students will have 10 minutes to complete each stage. Recommended to use a timer and to remind students throughout. Support: Provide students with 3D shapes so they are able to move the shapes and accurately draw the plan and elevation views of these (Eg. cubes/cuboids/cylinders/hexagonal prisms)Challenge: Encourage students to use more complex 3D shapes. | Slides 29 - 32Print the design briefs to students to refer through to support with each stage |
| 5. Sharing Outcomes (5-10 mins) | Gallery Walk: Each full group presents their 3 drawings for each of the 3 sets. Students walk around the class and look at the different interpretations of each of the 3 briefs.  | * What similarities do you notice between the drawings and therefore interpretation of each set?
* What differences do you notice between the drawings and therefore interpretation of each set?
* Was the final 3D drawing within your own group what you had imagined during stage 1 (plan view) and stage 2 (elevation view)?
 | Pose key questions to students before they complete their gallery walk so they are considering these questions as they walk around the classroom and compare each of the different set designs. Give students clear time limits to look at the drawings from each group. Support: students could be provided with a table to note down the similarities/differences of each of the ‘same’ sets. Challenge: students could be challenged to create a model 3D set from the 2D drawings of a completely different group. This would require them to interpret these drawings.  | Slides 34 - 36 |
| 6. Feedback and Celebration (5 - 10 mins) | Students should reflect on the communication challenges of working as a team when they can only communicate via their drawings and therefore the importance of these being accurate. Students should reflect on the importance of the accuracy of these drawings and think about the next stage of the set designing and building process.  | * How well did you work as a team?
* How important was it for your drawings to be accurate?
* How did you find working as a team but only being able to communicate by your drawings?
* What would the next part of the process of set design be?
 | Facilitate a class discussion to consider these key questions and ensure students understand how this task would fit into the process of creating a set for a Film. Support: Use a ‘think.pair.share’ task to allow students to discuss their ideas in pairs before discussing as a whole class. Optional Challenge Task: Present students with a plan view of a set and ask students to create the possible brief that the designer had been given here. This will assess students ability to interpret a plan and provide the opportunity for students to explore their creativity.  | Slides 34 - 39  |