# Worksheet 10: More Challenges

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| **Learning Intentions**: We are learning to be able to … |
| Interpret and implement a digital solution from a plan |
| *Why are we learning this?* |
| Programming is a problem solving discipline, where teams work together to plan, build, test and refine digital solutions. |
| **Success Criteria**: I will be successful if I can … |
| Use everything I have learnt to develop a working solution in Scratch to one of the challenge problems. |

## Instructions:

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| Acquire and integrate knowledge: |
| Develop a solution, prototype or part thereof in Scratch to one of the following challenges:  Bear Challenge (aka Dodge the Boulders, Eat the Burgers):  Frogger Challenge:  Spaceship (Asteroids) Challenge:  Forest Archery Challenge:     * Target moves around randomly but smoothly, altering direction every couple of seconds (so there is some prediction) * Each time the player scores a hit on the target, the target shrinks (i.e. it decreases in size) * If it gets too small after too many hits, it resets to its original size, but the speed increases * There are points depending on where you hit on the target * There should be a penalty for a miss * The game could finish on a negative score. Alternatively, you could use a timer to signify the end of a game, and give bonus time for good performance. |
| Extend and refine knowledge: |
| Draw these images programatically (i.e. using the pen tool, and control blocks):   |  |  | | --- | --- | | **Image** | **Paste code here:** | |  | Click here to enter text. | |  | Click here to enter text. | |  | Click here to enter text. | |  | Click here to enter text. | |  | Click here to enter text. | |  | Click here to enter text. |   (Images sourced from: <http://scratched.gse.harvard.edu/guide/download.html>) |
| Use knowledge meaningfully: |
| 1. Create a Scratch **level management framework** that has a play state, end game state, and a start-up state, and uses broadcast to switch between these states. You can indicate the different game states by changing the backgrounds of the stage. 2. You are exceptional for making it this far! Time for some advanced physics. Finish the advanced challenges:    1. Breakout    2. Platform / jumping / gravity    3. Swing / pendulum physics    4. Turret / catapult physics    5. Car drift physics |