

MATHS

AGES 11 – 14
LESSON PLAN

ESCAPE & EVADE

SKILLS COVERED:

- Distance
- Leadership
- Teamwork
- Speed
- Critical thinking
- Perseverance
- Time

Make maths exciting with this intense, fun and challenging game!
Test your class' maths knowledge as well as their critical thinking as they compete to avoid being recaptured. **The clock is ticking...**

#ArmySTEM

OVERVIEW

1 lesson combining maths with the STEM Accelerator attributes.

Duration:
🕒 1x 60 minute lesson

Maths is a skill which can be applied to any sector and any subject. All of civilisations' achievements can be linked back to mathematics in some shape or form. Completely inseparable from life and integral to progress, the study of maths leads to the skills of logic and rational thought and development of high cognitive ability. If you want to change the world, maths is an excellent place to start.

Escape & Evade is a game, But not just any game; it's a game of survival.

In it, your entire class has been captured by smugglers and imprisoned in separate huts. Working in their teams and using the maps provided, they must break out of the huts, collect the items they need to escape and reach the train station. They will tackle obstacles, different terrain and guards as they go and will have to keep their wits sharp in order to escape to safety.

The slowest team... won't be so lucky

This lesson relies on some general arithmetic knowledge from your pupils however, different abilities are catered for. It's also completely adaptable for ages and abilities, so feel free to adapt the game, its rules and its resources in a way that will suit you and your class.

Ready... set... ESCAPE!

PUPIL OBJECTIVES

- I can select and use appropriate calculation strategies to solve complex problems
- I can use algebra to generalise the structure of arithmetic
- I can solve equations
- I can develop my mathematical knowledge by solving problems
- I can select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems
- I can use critical thinking competitively to evaluate, analyse and take action in a game setting
- I can use perseverance to make decisions and change them based on new information
- I can work in a team to complete the task in a timely and orderly manner

ATTRIBUTES DEVELOPED

Leadership

Pupils will gain self confidence in being able to take control in difficult or challenging situations and become increasingly confident in making decisions based on limited information or under time pressure.



Critical Thinking

Pupils will become more confident in their ability to process and analyse information and data in order to make more informed decisions.



Teamwork

Pupils will develop their ability to work in a team thus improving their communication and collaborative work skills in order to achieve a common goal.



Perseverance

Pupils will become more resilient to knock-backs as they develop the grit, determination and patience to succeed when previously they may have given up.



LESSON

INTRODUCTION

This entire lesson takes the form of a game of Escape & Evade. Using the maps, counters and cards provided (see teaching notes) you will:

1. Split into teams of ideally even numbers.
2. Set out the **SCENARIO**, the **MISSION** and the **GAME RULES** using the PowerPoint and handouts provided.

SCENARIO

You were conducting a surveillance mission on a gang of smugglers when you were spotted and captured. You were split up and transported to three different smuggler hideouts and now you have to escape to avoid being taken to their main base, which will be much harder to escape from... and you have to do it very quickly.

All you have to help you are a ruler, a knowledge of maths and a calculator. You must use those three things to escape.

MISSION

Escape the area by catching a train

1. Break out of your prison hut by cracking the code for the security door (you do this by answering your first maths question).
2. Collect three items you will need to get away undetected:
 - Money
 - Disguise
 - Fake ID

The object of the game is to catch the train in the fastest possible time. The fastest team to escape will win the game, the slowest will be recaptured.

REMEMBER:

The shortest distance isn't necessarily the quickest route. Your pupils will have to decide, based on the information available.

LESSON

GAME RULES

1. You will move by plotting a route using your ruler and using the scale to measure distance.
2. **SCALE:** if the maps are printed on A3 sheets as advised, 1cm is 500m and 1mm is 50m
3. Each unit will start the game in a different prison hut:
 - A, B,C and D. For bigger class sizes, two (etc.) groups will start from the huts.
4. You can only travel in straight lines.
5. Some terrains are faster to travel across than others – follow the key on the map.
6. You must record the time it takes for you to travel to the nearest train station on the E&E Escape Plan worksheet with the total time used to decide who the winning and losing teams are.
7. The shortest time will get the highest score.

TERRAIN KEY

Open ground	3km per hour
Road	6km per hour
Fields	2.5km per hour
Swamp	1km per hour
Forest	2km per hour
Water	10km per hour (by boat)
Urban	2km per hour

Your pupils will be working from this key which will be provided with the map, alongside the scale.

There will be clear and distinct boundaries for each style of terrain to make.

OBSTACLES

Some types of terrain will be slower to cross than others. You will have to make decisions based on both time and distance in order to win.

Water can only be crossed by boat or bridge and there are no boats at the river, only the lake.

There are checkpoints near the train station.

Each checkpoint will take an hour to pass through. You will also need both a fake ID and a disguise to cross these checkpoints, unless you choose to pay-off the guards.

You can move around the checkpoints, but will need to avoid the circular exclusion zones.

The guards at the checkpoints can be paid off, cutting out the need to get a fake ID and shortening the distance you have to travel. You will also be able to pass straight through. However, you will need more money in order to pay-off the guards.

You will need both a disguise and £200 of money for tickets in order to escape on a train and fake ID if you choose not to pay-off the guards.

ITEMS

The items necessary for escape are located in different caches on the map.



CACHE A – MONEY

- You need to solve a maths problem – selected by the teacher from the deck – for every £50 you wish to collect.
- 1x correct answer = 1x £50
- You will need a minimum of £200 for the train fare, a further £50 each for the disguise and fake ID, should you wish to collect it, plus another £500 if you decide to pay-off the guards at the checkpoints. You can answer as many questions as you like.
- You will receive money tokens – in £50 notes – to signify how much you have.



CACHE B – DISGUISE

- Use a disguise to get through any checkpoint (unless choosing to pay-off the guard on the third bridge) and through the train station.
- You must answer a question from the deck to receive your disguise.
- You will receive a disguise token to signify that you have collected it.



CACHE C – FAKE ID (OPTIONAL)

- To get through the checkpoints, unless there is sufficient money for a pay-off.
- You must answer a question from the deck to receive your fake ID.

EVADE - EXTENSION OPPORTUNITY

This extender is encouraged for more advanced classes, especially those who look like they're well ahead of the other teams.

The smugglers know the break-outs have happened – and they're in pursuit!

At any point in the game, the Leader of the smugglers (the teacher) can place new obstacles on the map: checkpoints, guards and sniffer dogs.

Each smuggler will have a circular exclusion zone the players must reroute to avoid, adding to the total time.



QUESTION DECKS & ANSWERS

Each group will have to answer a question to break out of the hut and begin their escape. The teacher will begin the game by handing each group the first question to answer.

There are three decks of questions available to download and print off, with varying levels of difficulty:

- **BASIC**
- **INTERMEDIATE**
- **ADVANCED**

There are also sample questions for all three tiers which you can print off and stick on the back of the question decks. The groups must ask the teacher for the questions when they reach the caches. Only one question will be required to receive a disguise and the fake ID, but they can ask as many questions as they want when they reach the money cache. Remember, each correct answer wins the team £50.

Pupils can either work together to answer each question, or they can work individually to answer different ones. The money will only be passed over if the right answer is provided by the group, with the teacher only confirming if the answer is correct, or not.

HINT:

It is up to you to decide whether they should persist with a question until they get the answer right, or pass them another one.

PLENARY



Five minutes before the end of the lesson, tell the class to stop. Hopefully most, if not all, will have already reached the train station. Those who have not will be automatically captured and sent to the main base.

Those who have reached the station will now have to work out who made it there first, by adding together the time they have taken crossing the different types of terrain. They should have kept a log of those as they go on their activity sheet.

The slowest team will be met there and captured by the Leader of the smugglers. The teams that did successfully escape will be ranked based on time.

QUESTION DECKS & ANSWERS

ASSESSMENT OPPORTUNITIES

- Pupils can compete against each other to win a game of Escape & Evade
- Pupils will use their maths knowledge and skills to advance in the game
- Pupils will be able to plan several steps ahead in order to have the best chance of winning
- Pupils will be able to adapt their routes according to changing circumstances

HINT:

If some groups finish before others or the end of the lesson, here's what to do:

1. Ask them to work out how long it has taken them to escape. You'll ask the rest of the groups this at the end of the lesson.
2. Tell them to look back on their route and see what they could have changed to make their time faster (crossing different terrain, answering more questions to pay-off guards etc.)
3. Ask them where they would like to escape to now they have reached the train station (this one is just for fun).

HINT:

If you want to start the game quickly, give them a question to 'break the code' right at the start of the lesson. Either write it on the board or put in on their tables before the lesson.

For very slow starters, tell them they can 'break the lock' instead so they don't have to answer a question to begin.



TEACHING NOTES

CURRICULUM LINKS

- Pupils can use appropriate calculation strategies to solve increasingly complex problems
- Pupils can use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships
- Pupils can substitute values in expressions, rearrange and simplify expressions and solve equations
- Pupils can develop mathematical knowledge by solving problems and evaluating the outcomes
- Pupils select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems

BEFORE YOU START

This is a practical lesson which will require you to print out a number of 'maps' and worksheets to distribute amongst the groups, with one map and worksheet per group plus spares.

Make sure you run through the game rules on the PowerPoint before the lesson and keep the final slide open so pupils can check the game rules again if needed.

It will require you to act as 'Game Master' as well as the smuggler in pursuit. You will ask the questions necessary for breaking out of the prison huts and acquiring money, disguises and fake ID.

HINT:

Use the Escape & Evade Answer Sheet to help you keep the game running smoothly, but keep it hidden away so your pupils can't cheat.

HINT:

Collect the maps and tokens at the end of the lesson and reuse them. Only the worksheets should have been drawn on. It's also recommended you collect the worksheets to mark the calculations of their speed.

TEACHING NOTES

RESOURCES

- Download lesson introduction film
- Download Escape & Evade PowerPoint presentation
- Screen
- Projector
- Rulers (one per pupil)
- Pencils and rubbers

To print:

- A4 Instruction sheet
- Escape & Evade Maps - one per group plus spares and available in A3 and A2
- A4 Escape Plan worksheet - one per group plus spares
- Escape & Evade question cards (PRIVATE, CORPORAL or OFFICER)
- Escape & Evade tokens (MONEY, DISGUISE, FAKE ID)
- Evade counters (guards, dogs and checkpoints) - available in A3 and A2





**LIKE THE
LESSON
PLAN?**

**WOULD YOU LIKE THE ARMY
TO VISIT YOUR SCHOOL?**

BOOK YOUR FREE WORKSHOP BY CONTACTING
RG-NRCOUTREACHADMIN@MOD.GOV.UK

Show us how you and your pupils are doing!
Send your pictures, videos and feedback to us via:

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