

ADA'S DREAM

Rulebook



Introduction

In the summer of 1843, Ada Lovelace wrote to her friend Charles Babbage asking him to let her take control of the development of his new invention: the analytical engine. Babbage had created the blueprints for the prototype of an amazing steam-powered machine capable of performing complex mathematical calculations and even storing and printing the results. However, his inability to manage the project left it at a standstill.

Ada Lovelace understood how the machine worked and even wrote explanatory notes suggesting uses beyond arithmetic functions. Ada's original approach was to turn a mechanical calculator into the first ever computing machine.

Although Babbage did not accept a woman's proposal, extraordinary as she was, our game draws on the imagination to tell the story of a world in which Ada's Dream could be fulfilled. Players take on the role of assistants to Ada and will compete to construct the most effective prototype section as well as take actions around the board that hope to help Ada succeed.

Whilst there are some fictional elements of this game Ada's story was very much real, she was a genuine pioneer in maths and computing and her work is still celebrated today. Ada was very unusual for a woman of her time, a time dominated by men. Alley Cat Games brings this story to life in hope to highlight women in science and those who struggle against a system in which they do not fit. Every effort has been made to include people of different ethnicities and genders whilst also staying close to history. This means that some characters have been included that may not have any direct links with Ada, but that were alive and influential during the time period and that had interesting stories we wanted to share.

ADA LOVELACE 1815-1852

Popularly known as the daughter of the poet Lord Byron, Ada received a strict scientific education from her mother, unusual for a woman of her time.

She met the most privileged minds in Victorian society and developed an original ability to understand mathematics and other sciences. In her visionary writings, which included the first software program in history, she prefigures the digital age by explaining how Babbage's machine could transform the elements of everyday life into data, giving rise to the new science of information.

Ada's Advice:

Hello there, my name is Ada Lovelace, thank you for offering to help me make Charles' engine. I'll offer advice where I can to help you along the way, so keep an eye out throughout this book.



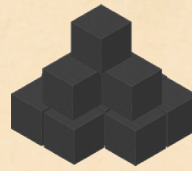
Components



1 Main board



16 Assignment Scoring tokens
(4 in each action colour)



36 Coal



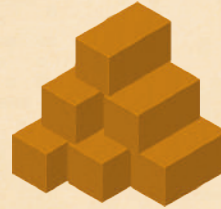
1 Scorepad



15 University tiles
(8 Southern, 7 Central)



28 Program tiles



36 Brass

In each player colour:



1 Player board



24 Objective tiles



30 Assignment cards



12 Book tokens



48 Coins in £1 and £5



12 Player discs



4 Research tokens



50 d6 dice (10 yellow,
10 blue, 10 green, 10
purple, 10 grey)



10 Tier 1 Partner cards
30 Tier 2 Partner cards



1 First Player token



1 Dice bag



8 Player Aid cards,
2 per player



1 Travel token



9 Breakthrough tokens



24 Addition Gear tiles
8 Subtraction Gear tiles
(all addition & subtraction
gears are the same)
12 Multiplier Gear tile



16 Science Scoring tokens
(4 in each Science)



4 Steam tokens



4 Innovation tokens



7 Starting Partner cards
(per player)

Setup

1. Place the **main board** in the centre of the play area.

Skip steps 2-4 unless you are experienced with the game. The standard setup is printed on the board.

2. Separate the **University tiles** by type. Shuffle each type separately and place one tile on each matching coloured space on the Travel section at random.

3. Separate the **Objective tiles** by type. Randomly place one Objective tile of the matching type onto the designated space of each action section.

Ensure all 4 Objective tiles show either A or B, replace any placed tiles as needed until all 4 tiles show the same letter.

4. Shuffle the **Breakthrough tokens** and place one at random on the designated space of each section's Research track.

5. Sort the **Assignment Scoring tokens** by colour to create 4 coloured stacks. Place the 1 tokens on the bottom and the 2 token on top. Place each stack in the designated space at the top of the matching coloured Research track.

6. Shuffle and randomly assign each of the 2 **Science Scoring tokens** to one of the four Meeting rooms. Place the matching coloured 1 tokens underneath to form 4 coloured stacks.

7. If playing with 3 players, remove 1 **die** of each colour. If playing with 2 players, remove 2 dice of each colour. Place all of the remaining dice into the Dice bag.

Draw 3 dice at random, roll them, and place them in an empty space of the Workshop section. Repeat this process for all 6 spaces.

8. Shuffle the **Program tiles** and place them into a face down stack (or multiple smaller stacks) in Ada's Study. Deal 5 Program tiles face up to the right of the stack.

9. Shuffle the **Assignment cards** to form a face down deck. Place the deck on the designated space in the Ada's Study section. Deal the top 4 cards onto the spaces to the right of the deck.

10. Place the **4 Starting Partner card decks** (S icon) to the side for now. Separate the remaining **Partner cards** by tier and shuffle each tier separately. Deal 1 tier 1 card to each player*.

If playing with fewer than 4 players, remove a number of tier 1 Partner cards so the remaining deck is always 6 cards.





Place the tier 2 cards to the side of the Main board next to the Meetings area (bottom left).

Place the 6 remaining tier 1 cards on top to form a face down deck. Deal the top 4 cards onto the spaces in the Meetings area.

**If all the players are experienced with the game you may wish to draft these cards in reverse turn order instead.*



11. Separate the **Gear** tiles by type. Shuffle the Multiplier Gear tiles into a face down stack and place it to the side of the board. Deal the top 2 tiles into the designated space of the Meeting section.

Give each player 1 Addition Gear tile and 2 Subtraction Gear tiles.

Place the remaining Addition Gear tiles on the designated space in Ada's Study.



12. Place the **Coal**, **Brass**, and **Coins** into a general supply below the Institution area. Place the **Books** in the designated space in Ada's Study.

This supply is not considered to be limited, should you run out of any given component, use a suitable substitute.

13. Each player selects a player colour and takes all the components of that colour.



14. Place the **Player board** in front of you, leaving space on all sides.



15. Place 1 **Research token** on the lowest space of each Research track.



16. Place your **Travel token** on the London space of the Travel section.



17. Place the 12 **Player discs** on the Gear spaces of your Player board.



18. Take 1 **Innovation token** and 1 **Steam token** and place them on the marked spaces of the corresponding tracks on your Player board.



19. Shuffle your randomly dealt tier 1 Partner card with your **Starting Partner cards** to form a face down deck and place it on the right hand space above your Player board (). Draw the top 4 cards into your hand.



20. Give each player **£4**, 1 **Coal**, 1 **Brass**, 1 **Book**, and 2 **Player Aid cards**.



21. The player who most recently used a computer becomes the first player, give them the **First Player token**. Play will proceed clockwise from the first player. Give the second player an additional £1, give the third player an additional Coal, give the fourth player an additional £1 and an additional Coal.

22. Return any unused components to the box.

Overview

A great technological revolution is brewing in the UK, in the heart of the Victorian age. Ada Lovelace, an inquiring mind and programming pioneer, has called upon you to help develop the first prototype of Charles Babbage's analytical machine. Ada provides you with the blueprints (your player board), the contacts (Partner cards), and guidelines (Objectives) to help you build the machine. When one player completes their prototype the end of the game is triggered, and you will count your Prestige Points; for sections of the machine built, Partner cards obtained, Universities visited, and Lectures given at Institutions. The player with the most Prestige will be the winner, and will be chosen by Ada to complete the project.

Ada's Dream is played over a number of player turns (typically 18 for each player), starting with the first player, and proceeds until the end of the game is triggered. Once a player has placed a 9th die on the Mill area of their player board, play continues until all players have had an even number of turns. All Prestige Points (🏆) are scored at the end of the game using the scorepad provided.

Gameplay

On your turn you must decide which of the two turn types you are going to resolve; a **Workshop** turn or an **Actions** turn. Each turn type is described in detail below. At the end of your turn you may either take a **Publish** action (by spending a Book) or **Build a Gear**, play then proceeds to the next player in a clockwise order.

GENERAL RULE: When a game effect allows you to take an item from a display outside of a main action in that area, slide any remaining items to the right and refill any empty spaces after resolving your effect.

REFERENCE NUMBERS

A number of components and locations on the board include reference numbers marked with this icon 📄. These are used in the solo game and when referencing the appendix in the separate expansions, solo, and appendix booklet.

WORKSHOP TURN

Tinkering in your own Workshop allows you to gather the parts (dice) you need to complete the machine. You'll also gain Research by calling on the experience gained from Assignments set for you by Ada and have the opportunity to call in favours from the great people of the time by playing Partner cards, if you can meet their requirements.

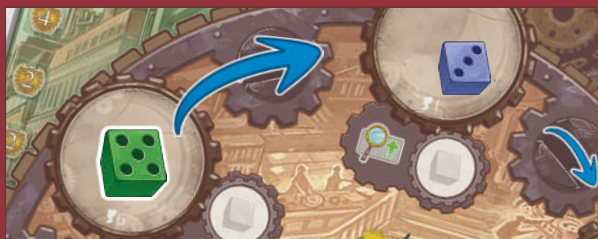
On a Workshop turn you will take one die from the Workshop area of the Main board and add it to the Store area of your Player board. If you do not have an empty space in your Store, you may not take this type of turn. You will also trigger a number of bonuses. To complete a Workshop turn follow these steps in order:

1. **Choose a die** from the Workshop. **Move this die** one space clockwise around the Workshop. You may spend 1 Coal to move the chosen die an additional space clockwise. You may spend 1 Coal to adjust the value of any one die in the Workshop by 1. You may take both of these options a maximum of once each.
2. The die you moved **pushes another die**, of equal or lower value, out of the Workshop space it ends its movement in. The pushed die is the die you will collect, on a Workshop turn this die becomes the active die. Place the active die onto the Workshop bonus space. You may not choose and move a die in step 1 such that no die is able to be pushed.
3. **Gain the reward** from the Workshop bonus space the active die now occupies. Each Workshop space has a different reward, as shown in the corresponding Workshop space.
4. If a Workshop space now contains no dice, draw 3 new dice from the bag, roll them and add them into the empty space, and then gain the reward shown on the corresponding Workshop bonus space.
5. Collect the active die from the Workshop bonus space and **place it onto** the highest empty die slot in the **Store area** of your Player board.
6. **Play up to one Partner card** from your hand. Some Partner cards require you to have an active die of a certain value in order to play them. Some partner cards have an additional cost to playing them. Resolve the effect shown on any played Partner card and discard it to the left of your draw pile.
7. If you collected a yellow, green, blue, or purple die, check the corresponding column of your **Assignment cards** under your player board. For each card in the column, you gain 1 Research of that colour. Move your Research marker up a number of spaces equal to the number of cards. (See Research on page 9). Grey dice do not activate Assignment cards.

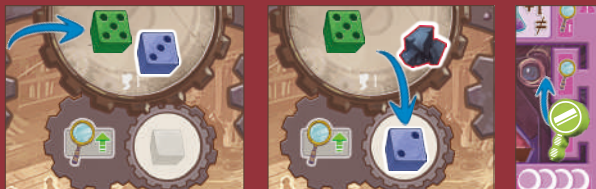
Ada's Advice:

The die you collect is important for a number of reasons; the colour determines what actions you can take later on and the type of research you can earn. The number determines which Partner cards you can play and is ultimately worth 🏆. Lower value die will be better for playing cards and higher value die score more 🏆. That's not all though, you also need to think about what Workshop bonus you want and the options you are leaving your rivals!

EXAMPLE TURN



Ketan (lime) is taking a Workshop turn. He selects this green 5 and moves it one space around the Workshop.



He chooses to spend 1 Coal to reduce the blue 3 to a 2 and pushes this die out into the research bonus space, he then chooses to gain the research in purple.



The area he took the die from is now empty so he refills it with 3 dice, drawn from the bag and rolled, and also gets the bonus of drawing 2 Partner cards.

Ketan places the active die on the store area of his player board. He chooses not to play a card, and as he doesn't have any assignments in the blue column, his turn ends here.



WORKSHOP BONUS SPACES



Gain 1 Research



Gain 2 Coal



Gain £3



Gain 1 Innovation



Gain 1 Brass



Draw 2 Partner cards from your deck



ADVANCED EXAMPLE TURN

If Ketan chose instead to play Augustus de Morgan from his hand (which requires a 2 dice), the following could have happened:



He places the active die on the store area of his player board. It's a 2, so Ketan plays Augustus de Morgan from his hand, as it requires a 2 dice. This gains him 1 Innovation and a Study item. He chooses the blue Assignment card. Visit Textile Factory allows him to gain 1 blue research and 1 Coal.



Taking the blue die then triggers the blue Assignment cards which gains him another blue research. Ketan has now reached a Breakthrough so gains 1 more Innovation.

1. Choose a die to move



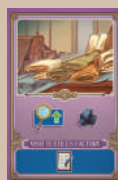
2. Push a die onto a bonus space



3. Gain the reward



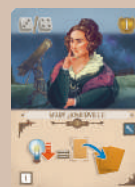
4. Refill empty Workshop spaces (only if empty)



5. Collect the active die and place it in your Store



6. Play one Partner card (optional)



7. Activate Assignment cards (optional)

PARTNER CARDS

Partner cards represent all the great people of the time that you and Ada need to work with. Each card will belong to one of five 'suits', the coloured cards belong to one of the four Sciences (Mathematics, Physics, Astronomy, and Engineering) and may earn you additional  at the end of the game via the Meetings action. The non-coloured Partner cards are sponsors who wish to support your endeavours.

You will always have eight Partner cards in your supply (deck, discard pile, and hand combined). During the game you may gain new Partner cards, whenever you do so you must immediately remove a Partner card from the game, this card must come from your hand or discard pile. Your deck is kept above your board and cards are drawn into your hand () and discarded into the left hand space (). Partner cards can only be played from your hand, and are immediately placed in the discard pile above your board. If you need to draw a card and your deck is empty, shuffle your discard pile to form a new deck and continue to draw cards as needed. There is a hand limit of five cards, if at the end of your turn you have more than five cards in hand, you must discard down to five cards.

Partner cards may be played on a Workshop turn, if you collect an active die that allows you to do so. They may also be played whenever you complete an action that shows this icon  without paying the normal cost.

1. Partner name and image.

- Requirement/Cost:** Some Partner cards can only be played on a Workshop turn if you collected a die of a specific value. Some Partner cards have a cost associated with playing the card on a Workshop turn.

2A). : To pay the cost of these cards you must reduce the value of the active die by 1. You may not play such a card using a die of value 1.

2B).  : To pay the cost of these cards you must spend £ equal to the value of the active die.

If you are playing a card as part of an action with the  icon, you do not pay the cost and you do not need to meet the requirement.

- Science:** Most Partner cards belong to one of the 4 Sciences (Mathematics , Physics , Astronomy , and Engineering ) you can tell which by the icon on the card and the background image. If you collect Science Scoring tokens from the Meeting action, these will earn you  at the end of the game for cards that belong to certain Sciences.
- Prestige:** Most Partner cards have a  value. This is calculated in final scoring.
- Effect:** All Partner cards show an effect you must complete in full when you play the card. If you are unable to gain the benefits of an effect or part of an effect you may still play the card but you do not gain any of its benefits.



Ada's Advice:

Try to get the best 8 Partners for your chosen strategy and their potential . Don't be afraid to change cards regularly and look for ways to play them.

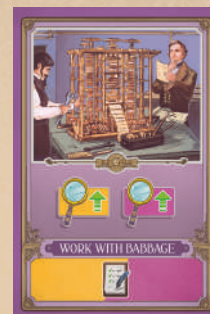
ASSIGNMENT CARDS

Assignments are tasks set for you by Ada when you visit her in her study.

Whenever you gain an Assignment card you get the effect shown on the card. The card is then added to the matching coloured column below your Player board. If an Assignment card shows two colours, you may choose which column to place it in from those two. If an Assignment card shows no colour, you may choose any column to place it in.



Some of the Assignments require help from your Partners and therefore require you to discard a number of Partner cards from your hand. If you cannot discard the required number of Partner cards, you cannot select that Assignment.



When you collect a die as part of a Workshop turn, check the number of Assignment cards in the matching coloured column. Each Assignment card gains you one Research. Move your Research marker up that number of spaces on the Research track of that colour. If you collect Assignment Scoring tokens from the top of Research tracks they will earn you  at the end of the game for cards that are placed in certain columns below your board (see below).

Ada's Advice:

Assignments are a great way to generate Research which you need to access the advanced actions and get the Breakthroughs. You want to try and get the access to the advanced action as soon as you can. Don't underestimate Assignments  potential too when combined with the matching scoring tokens.

RESEARCH

Each Action area of the board has its own Research track. Each player has a marker on all 4 tracks, which represents the level of their Research in that area. When your marker reaches a Breakthrough space (marked with a !), you gain the reward shown on the Breakthrough token placed near the top of that track .

In addition to that, each Research track grants 2 levels of Advanced action . If your marker has reached or passed one of these levels you may take an Advanced action after your main action when taking an Actions turn.

Whenever you reach the top of a Research track you must take the Assignment Scoring token  from the top of the stack for that track and place it next to your player board. You may only gain 1 token of each colour. These tokens earn  at the end of the game for each Assignment in the matching coloured column below your player board. The first token is worth 2  per Assignment, and the remainder are worth 1  per Assignment.

Once you have reached the top of a particular Research track you may not gain any further Research on that track. If you have a choice, you must gain Research on a different track, if the Research you gained is specific to that track (i.e. from Assignments when you collect a matching coloured die) the Research is not gained.



RESOURCES AND INNOVATION

The game features a number of resources. Resources are gained and spent throughout the game. You may have an unlimited amount of each resource. A cost that must be paid in resources must be paid using that resource, no substitutes can be made. If the supply ever runs out of a certain type of resource you may use any suitable substitute.

The resources are money (shown in £), Coal, Brass, and Books.



Innovation is also gained and spent throughout the game but is instead tracked on your player board. Whenever you gain Innovation, move your Innovation marker up one space for each Innovation gained. Whenever you need to spend Innovation, move your Innovation marker down the required number of spaces. You may never have more than 6 Innovation. Whenever your marker reaches the top space of the Innovation track you may immediately choose to spend 2 Innovation to gain one Workshop bonus of your choice. If your marker is already at the top of the track, you may not gain any more Innovation.



Ada's Advice:

Innovation is used in Institutions and Meetings, it is gained from Partner cards and other sources. Coal is used in the Workshop and your machine, it's mostly found in the Travel action. Brass is used for building Gear tiles and is harder to come across, look for certain Partner cards or Institution effects. Money is used to recruit Partner cards and Travel the map but can be found in most places. Books are the game's rarest and most special resources, I'll give you some from my study and you can use them to get the powerful Publish actions in each area.

ADA'S STUDY

Visit Ada herself in her study at Ockham Park to gain Programs and Gears for your machine, Assignments to help you research, and Ada's writings in the form of Books which are used to gain powerful rewards depending on when you choose to publish them.

MAIN ACTION

Select ONE Program tile



AND

Select ONE Study reward



- Gain 1 Book
- Gain 1 Addition Gear tile
- Gain 1 Assignment card (see page 9)

After selecting a Program tile, remove the tile in the rightmost space from the game, if one is placed there.

Slide all remaining tiles to the right to fill any empty spaces and draw new tiles from the stack to fill any empty spaces to the left.

After selecting a Study reward, remove the Assignment card in the rightmost space from the game, if one is placed there. This step is carried out whichever Study rewards you choose to take, not just when you select an Assignment.

Slide all remaining cards to the right to fill any empty spaces. Then draw new cards from the deck to fill any remaining empty spaces to the left.

ADVANCED ACTION



If you have reached the first level of the Research track, you may select an additional Study reward. This must be different to the Study reward you have already selected.



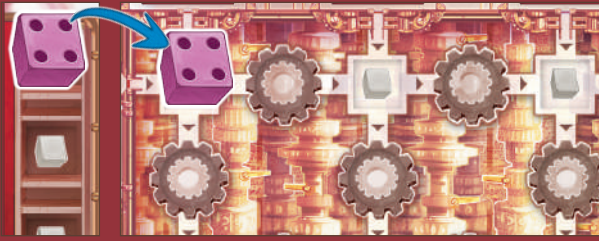
If you have reached the second level of the Research track, you may select all 3 Study rewards.

Ada's Advice:

Actions in my study are great for getting stuff which can help you earn but unless you take the Publish action you won't be placing a disc.



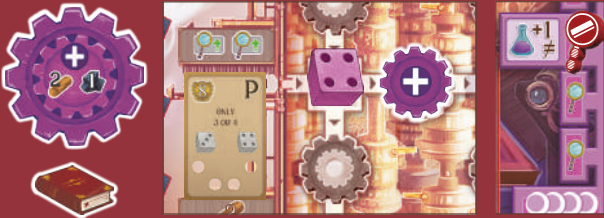
EXAMPLE TURN



Serena (red) uses the purple 4 from her Store to take an Ada's Study action, placing it into the Mill area.



She first selects a Program tile, she chooses the 8 one that would score her for dice of values 3 and 4. She places it on the gain 2 Research bonus.



She then chooses to take an Addition Gear tile. As she is at the first level of the Research track she also chooses to take a Book. Serena decides not to spend a Book to do the Publish action and instead spends 2 Brass and 1 Coal to build the Addition Gear into her Mill area. She flips the Gear tile to show the large + symbol, which will be important in final scoring.

PROGRAM TILES

Program tiles are the punchcard programs that Ada used to program the machines.

Each one shows a scoring criteria. Program tiles are placed into rows or columns of the Mill area of your player board. Gain the reward shown on the space immediately.



Gain 1 Book



Gain 2 Innovation



Draw 3 Partner cards



Gain 2 different Workshop bonus space rewards



Gain 2 Research



Gain 2 Brass



At the end of the game, if there are 3 dice in the row or column that meet the criteria of the Program tile, you earn the number of shown on the tile. Having Gear tiles or discs present in the line do not affect the scoring of Programs.

Ada's Advice:

Completing Programs can get you good . There are ways to change the dice in your Mill to match your Programs using the Publish actions at the Institutions or Travel actions.

GEAR TILES

Gear tiles are a vital part of your machine and must be placed between dice to complete a row or column. The Gear tiles determine how each row or column scores in final scoring.

You start the game with some Gear tiles in your personal supply and may gain more from either the main action at Ada's Study or the Publish action in the Meeting area. Whenever you gain a new Addition Gear tile, take it from the supply in Ada's Study. Whenever you gain a new Multiplier Gear tile, take it from the display and immediately refill the empty space. Whenever you gain a Gear tile, place it into your personal supply.

You may only Build a Gear tile (see page 19) using the Build a Gear effect and by paying the cost. Each type of Gear tile shows the cost you need to pay to build the Gear tile into your machine.

Ada's Advice:

Constructing Gear tiles will always get you points, even those Subtraction Gears prevent you from losing 2 and if you place them with a low number after them or even better in a line you will not complete they will gain you overall. The biggest scores can come from machines with 3 Multiplier Gear tiles in, but it's not easy and there's plenty of ways to try and do it!



TRAVEL

Travelling round the country costs money and allows you to gather the other resources you may need. Each city offers you rewards for visiting it but if you visit a prestigious University you will have the opportunity to place a disc and earn  at the end of the game.

MAIN ACTION

Move your Travel token to another City and activate that City. You may move through any number of other Cities but must pay the cost in £ for each route you travel along. Roads cost £1, Rails cost £2, and Ferries cost £4.

If the City you finish your movement in is a small City, gain the reward shown in the City space. If the City you finish your movement in is a University City, in addition to taking the reward shown, you must also place one disc from your player board next to the University tile. You may not place a disc on nor gain any rewards from a University tile which already contains one of your discs. If discs belonging to other players are present, place your disc on top of all discs already placed. Your disc will earn an additional 2  for each disc placed on top of it in final scoring.

ADVANCED ACTION



If you have reached the first level of the Research track, you may move to the next small City (see below) after resolving the first City. Do not pay the cost to travel to that small City but still resolve the City as described above, gaining any reward.



If you have reached the second level of the Research track, you may move to a small City up to 2 small Cities away (see below) after resolving the first City. Do not pay the cost to travel to that small City but still resolve the City as described above, gaining any reward.



Ada's Advice:

Travelling around the UK is a great way to gain resources as well as a range of other game effects but moving costs money. Actions that allow you to move for free can really help navigate the map.

MOVEMENT ON THE MAP

The Advanced Travel action, and a number of other effects allow you to move your Travel token to either small Cities or Universities on the map. When doing so you may skip over any locations that do not match the indicated type. I.e. If you are moving to the next small City you may skip over any number of Universities until you reach a small City and vice versa. If movement costs must be paid, you must pay for the whole movement.



Move to University



Move to small City

UNIVERSITY TILES

The University Cities are divided into three regions, two of which may be randomised in the setup of each game. Each tile shows **1** a reward which is gained when you visit the City, **2** a space to place players discs in, and **3** a value in  which is scored at the end of the game. All players with a disc placed on a University tile earn the  shown in final scoring. In addition you will earn 2  for each disc placed on top of yours.



EXAMPLE TURN



Anthony (sky blue) uses the blue 1 from his Store to take a Travel action, placing it into the Mill area. He wishes to move from Oxford to Manchester. The movement costs £6 (£1 for each road and £2 for the train). He places a disc on the University, gains an Addition Gear tile, and builds an Addition Gear tile for free.

As he is at the first level of the Research track he also gets to move to the nearest small city for free, also gaining the reward. Anthony chooses to move to Liverpool, gains a Coal and £3. He doesn't Build a Gear or do the Publish action.

MEETING

Who you know is almost as important as what you know. Attend the social meetings with all the great minds of the time to try and get their help in the future. You can gain access to these valuable Partners by either impressing them with your Innovation or by spending money to show your success.

MAIN ACTION

Place a disc in the top leftmost empty space of a Meeting room by paying the cost shown in either £ or Innovation.

Select one Partner card from the display to add to your hand. The card may come from the card slot beneath the Meeting room you placed your disc into, or any slot to the right: i.e. if you place a disc in the leftmost room, by paying £5 or 3 Innovation, you may select any of the four cards in the display. If you place your disc in the rightmost room you may only select the Partner card placed beneath that room.

Remember; whenever you gain a new Partner card you must immediately remove a Partner card from your hand or discard pile so you always have 8 cards.

Draw a number of Partner cards from your deck as shown below the space you selected the card from.

After selecting a Partner card, if one is placed there, remove the card in the rightmost space from the game.

Slide all remaining cards to the right to fill any empty spaces and draw new cards from the deck to fill any remaining empty spaces to the left.

ADVANCED ACTION



If you have reached the first level of the Research track, you may play a card from your hand without meeting the normal cost.



If you have reached the second level of the Research track, you may draw 2 cards from your deck and then play a card from your hand without meeting the normal cost.

Ada's Advice:

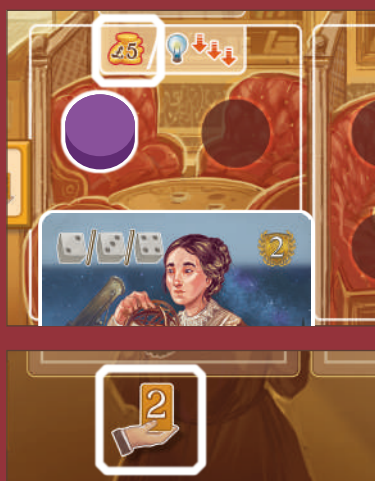
Partner cards are the best way to change your options from those of other players. Get the best blend of eight cards that suits your strategy and find ways to play them. Also try to win majorities in the rooms that match the Science of the cards you have.

SCIENCE SCORING TOKENS

At the end of the game the Science Scoring tokens are awarded based on the number of player discs placed in each room. If you have placed the most discs you gain the 2 Science Scoring token placed above that room, all other players with discs in that room gain a 1 Science scoring token. If there is a tie for most discs, all tied players gain a 1 Science Scoring token and all other players gain nothing from that room. Place the token next to your player board. Each Science scoring token earns you for Partner cards of that Science you have in your supply at the end of the game.



EXAMPLE TURN



Isobel (purple) uses the grey 4 from her Store to take a Meetings action, placing it into the Mill area. She wishes to get the leftmost card so pays £5 and places a disc in the leftmost Meeting room. She adds the card to her hand and draws 2 cards from her deck. Isobel chooses to remove Menabrea, placing it back in the game box. Her draw pile only contains 1 card so she shuffles her discard pile to form a new deck before drawing the second card.



Isobel has reached the second level of the Research track so gets to draw 2 more cards and then play a card. She plays Caroline Herschel, the card she just got. This allows her to build an Addition Gear tile for free. Isobel chooses to spend a Book to gain a Multiplier Gear tile. Even though she can afford to build it now she must wait for another turn as she chose the Publish action instead of building a Gear.

INSTITUTION

The Institutions attract the greatest minds and have great sway in what theories succeed or fail. You'll need to present your ideas in the form of a Lecture at an Institution, sharing your Innovation with those in attendance can get you great rewards.



MAIN ACTION

Select one Lecture space on the board. The spaces are divided into 6 levels and 4 Institutions. Level 1, which spans all four Institutions, may not hold any discs. Each Lecture space in levels 2-6 may only hold 1 disc (except additional discs placed using the Publish action from Ada's Study). Pay the cost in Innovation and place a disc onto the selected Lecture space. Remember discs are not placed in Level 1. Gain the effects shown on the space.

The cost of placing a disc in each level is the cost of that particular level plus any levels below that neither contain nor are below one of your discs. (ie. each level between the disc being placed, and your next highest placed disc)

When checking a level for a disc, all columns are checked, not just the column you placed your disc in. The cost of the level you are placing in is always counted, even if there is another disc of your colour at that level.

GOST EXAMPLE

Isobel (purple) is taking an Institution action for the first time.

It is not possible to place in level 6 as the cost is above 6 ⚡ which you cannot have.

Level 5 costs 6 ⚡
(level 5 + level 4 + level 3 + level 2)

Level 4 costs 4 ⚡
(level 4 + level 3 + level 2)

Level 3 costs 2 ⚡
(level 3 + level 2)

Level 2 costs 1 ⚡

She chooses to spend 2 ⚡ to place in level 3.



On a later turn Isobel takes another Institution action, now the costs have all been reduced because you do not add levels under a level with a disc you have already placed.

Level 6 costs 7 ⚡ and is still not available.

Level 5 costs 4 ⚡
(level 5 + level 4)

Level 4 costs 2 ⚡

Level 3 costs 1 ⚡

Level 2 costs 1 ⚡

She chooses to spend 4 ⚡ to place in level 5.



Ada's Advice:

Doing a Lecture of a lower level makes future actions cheaper by reducing the cost, you'll always need to pay the cost of the Lecture row itself but as soon as you reach a disc in a lower row all additional costs are ignored.

ADVANCED ACTION



If you have reached the first level of the Research track, you may gain an additional reward of your choice from an unoccupied space at a lower level in the same Institution.



If you have reached the second level of the Research track, you may gain an additional reward of your choice from an unoccupied space at a lower level in any Institution.

EXAMPLE TURN



Ketan (lime) uses a green 6 from his Store to take a Lecture action, placing it into the Mill area. He has 5 Innovation and has already placed a disc on level 4 so may select any empty space in any level. He chooses to place the disc in level 6 of the Royal Society and spends 5 Innovation.



The effect allows him to use the effect of a card in the display of the Meetings area and gain a Science Scoring token for Engineering. He uses the effect of Bryan Donkin to gain £3 and convert a Subtraction Gear tile into an Addition Gear tile, taking that Gear tile from the supply.



Ketan has reached the second level of the Research track so may select any empty space below level 6 and also get that reward. He chooses to gain 2 different Study items, choosing an Addition Gear tile and a Book. Ketan chooses to not spend a Book but instead builds an Addition Gear tile, spending 2 Brass and 1 Coal.

TAKE A PUBLISH ACTION

OR BUILD A GEAR

Whichever turn type you took you may either spend a Book to complete the Publish action of the area in which you took your main action OR Build a Gear into the Mill area of your player board. You may choose only one of these options or choose to forgo the option.

Spend one Book to complete the **Publish action** of the selected area.

OR

You may **build ONE Gear tile** into your player board. (This may be completed whilst the next player takes their turn.)

PUBLISH ACTIONS

WORKSHOP PUBLISH ACTION



Spend one Book to advance your Steam marker one space. Each advancement may have a cost that needs to be paid in Coal shown on your Steam track.

STEAM POWER

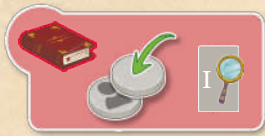
Steam is used to power your machine. The level of your Steam marker at the end of the game limits how many you may earn from each completed line in your machine. Each level allows you to score more per line, i.e. Steam level 3 allows you to score a maximum of 20 for each line (see final scoring).

Ada's Advice:

Steam is vital if you have high scoring lines in your Mill. However if you're going for lots of lower value lines you might not need it as much.



ADA'S STUDY (PURPLE) PUBLISH ACTION:



Spend one Book to remove a disc from your player board and place it on top of a disc of your colour that has been placed in an action area on the main board (not on an Objective). You do not gain the rewards shown on the space on which you place the disc. You may however perform the first level advanced action of the area you have just placed in, irrespective of your level on the research track. You may never have more than two discs in the same location. They will however count towards final scoring and any Objectives. If you choose to take this action when you do not have any other discs placed on the board, simply remove the disc from the game.

EXAMPLE TURN

Serena (red) has taken an action at Ada's Study and wishes to also take the Publish action. She spends the Book and takes a player disc from her player board. The disc must be placed on top of one of her discs on the main board.



She has 3 options; in the Travel area she can place the disc on Manchester which would be worth 2 for having 1 disc on top of her other disc, in the Meetings area she can place it in the rightmost room to secure the majority and earn more from her Maths Partner cards, but as she is already winning the majority there she chooses to place it in the Institution area, in the Astronomical Society to beat Isobel (purple) in the tie for majority which is worth 8 . She then gains the effect of any one empty space in that Institution, she chooses to draw 2 Partner cards and gain 2 different Breakthroughs.

TRAVEL (BLUE) PUBLISH ACTION:



Spend one Book to change the values of dice placed on your player board (either in the Mill or Store areas) by up to 4 dice pips. You may change the value of any dice up or down and may use the 4 dice pips on 1-4 different dice. You cannot reduce a '1' or increase a '6'.

MEETINGS (YELLOW) PUBLISH ACTION:



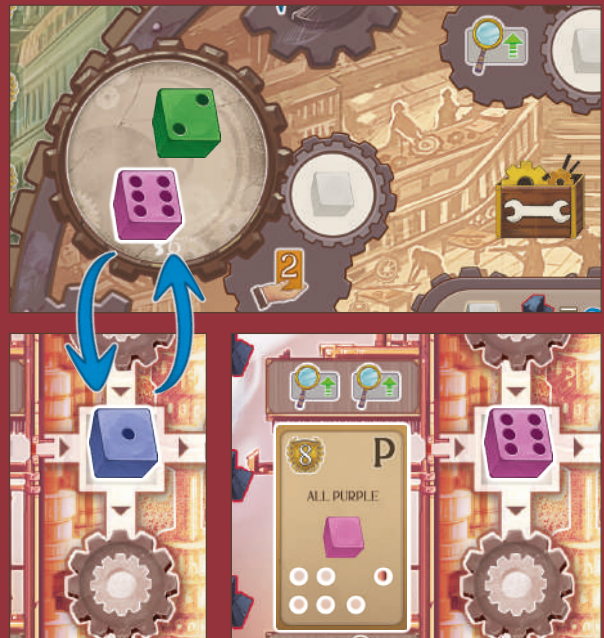
Spend one Book to gain a Multiplier Gear tile from the display. Each time you gain a tile, immediately refill the empty space in the display.

INSTITUTION (GREEN) PUBLISH ACTION:



Spend one Book to swap any die from your player board with any die in the Workshop. The two dice must be swapped exactly, being placed in the same player board or Workshop spaces as the other die came from.

EXAMPLE TURN



Anthony (sky blue) has taken an Institution action and wishes to also take the Publish action. He spends the Book and swaps the 1 blue die from his Mill area with the purple 6 in the Workshop. This not only increases his score but also matches the requirements of the Program tile.



BUILD A GEAR TILE

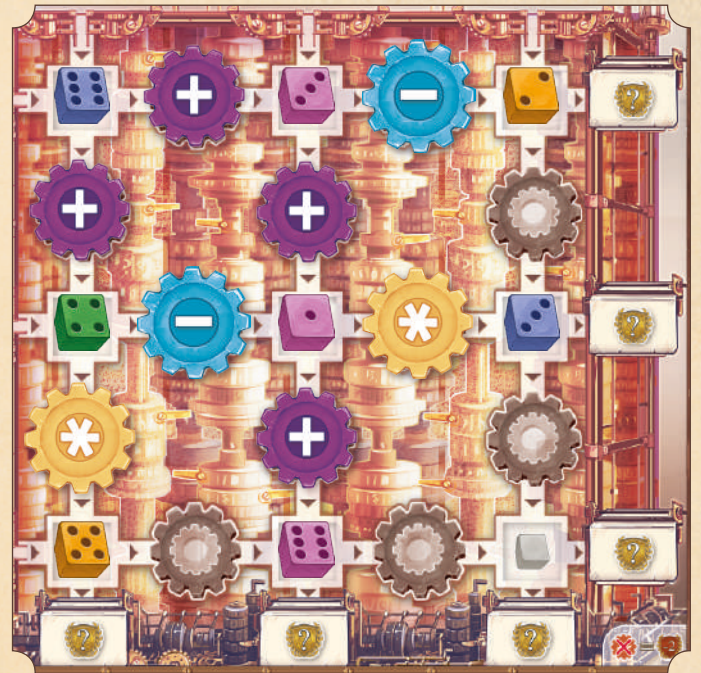
To build a Gear tile, pay the cost shown on the Gear tile you wish to build. All Subtraction and Addition gears have a set cost. Each Multiplier Gear tile has a different cost that may include Innovation as well as £, Coal, or Brass.

Once you have paid for the Gear tile you may place it in any empty space of the Mill area of your player board, cost side down. Once placed, Gear tiles cannot be moved or removed unless a reward states otherwise.



Gear tiles determine how each row or column scores in final scoring. Each completed line is processed in order, from left to right or top to bottom. This contradicts modern mathematical process but represents the machine Babbage designed processing each sum in turn. For more details on how Gear tiles score, see final scoring on page 20.

This may be completed while the next player in turn order takes their turn.



OBJECTIVES

Each of the action areas has an Objective which relates to the actions taken in that area. When you complete the Objective you must place a disc on the Objective. The first player to complete an Objective places a disc on the higher value space. Any other players who complete the Objective in the same number of turns may also place a disc on the higher value space, once play reaches the first player again all remaining players must place a disc on the lower value space instead. These are scored at the end of the game.

Ada's Advice:

Working towards the Objectives can help guide your strategy, try to complete them before other players to earn more. Also, placing discs on Objectives creates space on your player board for more Gear tiles.

EXAMPLE



Isobel (purple) has just placed a 3rd disc into a different room in the Meetings area. This fulfils the Objective so she takes another disc from her Mill area and places it on the Objective. As no one else has done this yet, she takes the 7 space.

OBJECTIVE EXAMPLES



Visit Bristol and Manchester

Have 2 Assignments in the purple column

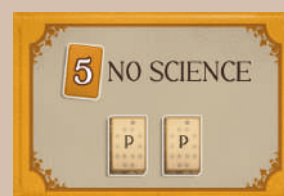


Have 1 die of each main action colour in your Mill.



Build 1 Multiplier Gear.

Give the most Lectures in 2 different Institutions.



Have 5 Partner cards that don't belong to a Science.

Place 2 Programs.



End Game and Final Scoring

The end of the game is triggered when a player places their 9th die into the Mill area of their machine. Play continues until all players have had the same number of turns, i.e. the player to the right of the first player takes the final turn of the game. Once that player has finished their turn all players proceed to final scoring

FINAL SCORING

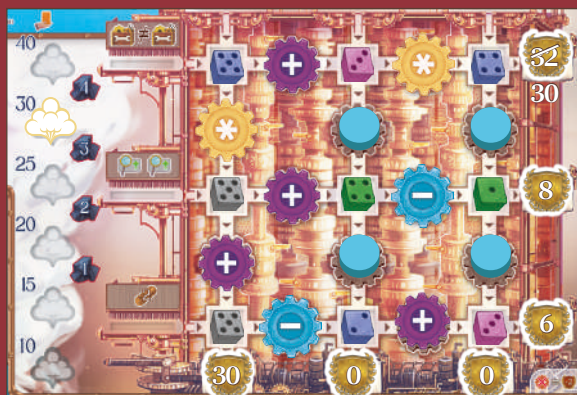
Players earn  as follows:

1. **Objectives** - Each player earns the  shown on any Objectives where they have placed a disc.
2. **Travel** - Each player earns the  shown on any University tiles where they have placed any number of discs. In addition for each disc placed the player earns 2  for each other disc that has been placed on top of it.
3. **Lecture** - Each Institution row awards a number of  to the player who has placed the most discs in that row. In case of a tie, all tied players earn half the  shown.
4. **Meeting** - Each Meeting room awards Science Scoring tokens of a particular Science. If you have placed the most discs you gain the 2  Science Scoring token placed above that room, all other players with discs in that room gain a 1  Science scoring token. If there is a tie for most discs, all tied players gain a 1  Science Scoring token and all other players gain nothing from that room. Place the token next to your player board.

For each Science Scoring token you earn  equal to the value shown on the token for each Partner card you have of the matching Science.
5. **Partner Cards** - Sum the total number of  shown on all cards in your supply including any negatives.
6. **Programs** - For each Program tile placed on your board check the dice in the same line. Providing 3 dice have been placed and they match the criteria of the Program tile you earn the  shown on the tile. If there are fewer than 3 dice or they do not match the criteria you score nothing for the Program tile.
7. **Completed lines** - A line (row or column) is considered to be completed if it contains 3 dice, and 2 Gear tiles. For each completed line calculate its value from left to right or from top to bottom (see examples below). The final value is limited by the Steam Power, the final value of a line cannot exceed the Steam Power.
8. **Gears** - For each gear fewer than 12 you have failed to build you lose 2 .
9. **Innovation** - The upper spaces of the Innovation track show a number of . If your marker finishes the game in one of these spaces, earn the amount of  shown next to your marker.
10. **Assignment Scoring tokens** - For each Assignment Scoring token you earn  equal to the value shown on the token for each Assignment you have in the matching coloured column below your player board.
11. **Leftover resources** - Every remaining Book is worth 1 . Every 10 remaining £, Coal, and Brass are worth 1  in any combination.

The player with the most  is declared the winner and is chosen by Ada to complete the analytical engine. If any number of players are tied for the most  the tied player who has built the most gears wins. If still tied, the tied player with the highest total value of dice in their Mill area wins. If that's still a tie the player closest to the player with the first player token in a clockwise order wins.

COMPLETED LINES EXAMPLE



Anthony (sky blue) scores his completed lines as follows. Remember that for a line to be complete it must contain 3 dice and 2 Gear tiles. Calculate the score from left to right and top to bottom.

Top row: $5 + 3 = 8, 8 \times 4 = 32$. Although this line would only score 30  as its limited by the Steam

Middle row: $5 + 4 = 9, 9 - 1 = 8$

Bottom row: $5 - 2 = 3, 3 + 3 = 6$

Left column: $5 \times 5 = 25, 25 + 5 = 30$

The other two columns are not complete.

Final score from completed lines: 74 .

EXAMPLE SCORING

Isobel (Purple) Scores:

1 1st place disc for 7 .



2 discs on Bristol and 1 on Manchester for 6 .



2 Room majorities gaining the 2  tokens for Engineering and Astronomy. 2 cards of each of those Sciences for 8 .



Partner cards worth a total of 9 .



Tied for the level 6 Institution majority for 4 .



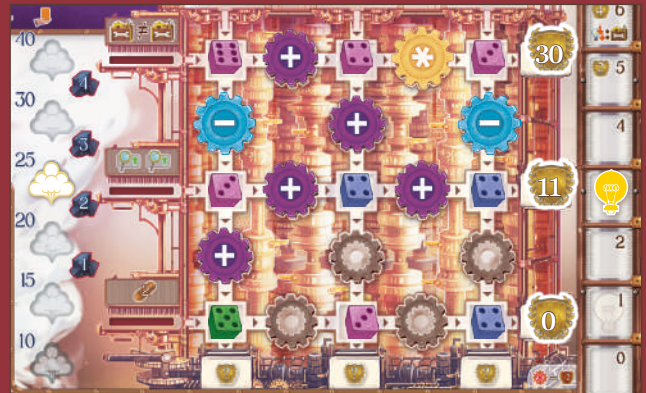
4 completed Programs for 30 .



3 lines are complete, the one that totals 30 is limited to 25 by the Steam Power giving a total of 44 .

4 spaces do not have Gear tiles on for -8 .

Not in the top 2 spaces of the Innovation track for 0 .



The 2  Assignment Scoring token for purple and a 1  token for green for 6 .



No leftover Books and a total of 14 £, Coal, and Brass for 1  (£7 + 4 Coal + 3 Brass).



TOTAL SCORE: 107

Icon Reference

A number of components and locations on the board include reference numbers marked with this icon . These are used in the solo game and when referencing the appendix in the separate expansions, solo, and appendix booklet.

WORKSHOP REWARDS



Take the amount of Brass, Coal, or Coins shown from the supply.



Draw the number of cards shown from your deck to your hand. If your deck is empty, shuffle your discard pile.



Advance your Research token one space up any Research track.



Advance your Innovation marker one space up your Innovation track for each arrow shown.



Take any one of the above 6 Workshop rewards.

STUDY REWARDS



Take one book from the supply.



Take one plus gear from the supply.



Take one assignment card from the market.



Take any one of the above three study item rewards.

COSTS



Return the amount of Brass, Coal, or Coins shown to the supply.



Reduce your Innovation marker one space down your Innovation track for each arrow shown.

CARDS



Play a Partner card from your hand without paying the cost.



Gain 1 Partner card from the display without paying the cost, placing a disc, or drawing additional cards. Place the card in your hand.



Use the effect of any 1 Partner card from the display.



Gain the shown reward equal to the number of cards in your hand.



Discard / Draw the number of cards shown from your hand to your discard pile.

GEARS



Take a Multiplier Gear from the market.



Build a Gear, paying the usual costs.



Build an Addition Gear without paying the cost.



Swap a built Subtraction Gear from your playerboard with an Addition gear from the supply.

TRAVEL



Move your Traveller to a Small City up to 1 space away. Do not pay the cost in £. Gain the rewards shown.



Move your Traveller to a Small City up to 2 spaces away. Do not pay the cost in £. Gain the rewards shown.



Move your Traveller to the nearest (fewest movement steps) University. Place a disc but do not pay the cost in £ or gain any rewards.

DISCS



Place a disc on top of another of your discs.



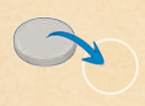
Place a disc in any available room in the meeting area. Do not gain the reward or pay the normal cost.



Place a disc on a University. Do not gain the reward, move your traveller, or spend £.



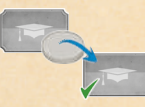
Place a disc on an available Institution space. Do not gain the reward or spend Innovation.



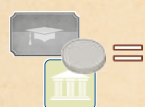
Move a disc on the Main board to any available disc space on the board. Do not gain the reward.



Remove a disc from your player board, place it in the game box.



Move a disc from 1 University City to a different University City and gain the reward shown.



Gain the reward depicted for each player disc you have placed on the Institutions and Universities.



For more information on institution level cost, see page 16.

OTHER ICONS



Carry out the action displayed without paying the normal cost (red cross) but do not gain the usual rewards (no green tick) or gain the usual rewards (if green tick is present).



Take a 1 point Assignment token from any Research Track.



Take a 1 point Science Scoring token.



Advance your Steam marker up one space. Pay the cost in Coal.



Advance your Steam marker up one space. Do not pay the cost in Coal.



Take a Program from the market of Programs. Add it to a Program space on your Player Board and take the matching Bonus.



Take any level 1 advanced action.



Advance your Research token one space on the Research track or the colour shown.



Take the reward shown on any 1 Breakthrough token.



Swap a die on your playerboard with one in the Workshop.



Adjust the value of any die on your Player board or in the Workshop up or down by 1 pip.



The rewards associated with this icon each need to be different

Quick Reference

STARTING RESOURCES

Each player starts with: 

2nd Player: 

3rd Player: 

4th Player: 

WORKSHOP ACTION

- Spend 1 Coal to advance any die 1 space



- Spend 1 Coal to adjust the value of any Workshop die up or down by one pip.

Each action can only be done once.

These actions can be done at any point during the Workshop turn.

KEY REMINDERS



Completed Lines are calculated sequentially from left to right or top to bottom. (ie. $2+3 \times 5 = 25$, not 17)



Players can only Publish OR Build once per turn, at the end of their turn. There are 12 gear spaces and usually only 18 turns. Don't forget to build your gears!



A program does not count as a study item when taking the study item reward.



When moving your traveller to a Small Town for Free, University spaces are not counted and can be skipped over.



The cost of placing a disc in each level is the cost of that particular level plus any levels below that neither contain nor are below one of your discs. (ie. each level between the disc being placed, and your next highest placed disc).

When checking a level for a disc, all columns are checked, not just the column you placed your disc in. The cost of the level you are placing in is always counted, even if there is another disc of your colour at that level.

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