Cavendish nuclear
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ACTIVITY BOOKLET 2025

Winter Edition

Welcome!

Are you ready to explore the incredible world of nuclear energy?

At Cavendish Nuclear, we use cutting-edge science to split tiny particles called atoms, unlocking immense power that helps light up our homes, schools, and hospitals. It's like capturing the energy of a star—how amazing is that?

But the magic doesn't stop there! Cavendish Nuclear also helps power state-of-the-art submarines using nuclear technology. These incredible vessels can travel the globe beneath the waves, staying underwater for months at a time. They play a vital role in exploration, research, and even national defence. Fascinating, right?

Now it's your turn to dive in and explore! This booklet is packed with fun, festive activities to spark your curiosity and creativity. Who knows? One day, you might invent something extraordinary that changes the world forever.

Let's get started!

Creating a safe and secure world **together**

Explore Inside

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Unlock the Words

R L T V V P Y T P V O A S A U X R I J B N D
D N J E N B Y H A R K J F J N I N V E N T G
N P A J D K D I P W O Z E T K A D N S S N L
S P Z H V C T N A Q T B T H E C L S I W K E
S C I E N C E K R B E W L B L R J Y N T R A
T C S L J Y A I O B C J D E B E S T S W P R
E U X T M D M N B O H S O D M A E C A I V N
C R E M A Q W G O J A C O N O T B I H F S I
H I N A N C O P T J M H F L K I D I M O O N
N O G T C U R R I C U L U M V V X P X W O G
O S I H C S K L C B R I N I T I A T I V E L
L I N E A N N J S F R V O S Q T N Z N S V P
O T E M M F S C H O O L M F K Y N G N O B W
G Y E A P C O M M U N I C A T I O N W I O G
Y L R T V W E E D U C A T I O N L K Z O Z O
Z G I I Y A D M L F R V U E Z K V L C E H E
B O N C S L Z V X D E S I G N W Z F S R C Y
U Z G S H B I W O D S T U D E N T S F M G O

Analysis
Science
Solving
Thinking
Engineering

Curiosity
Invent
Communication
Skills
Creativity

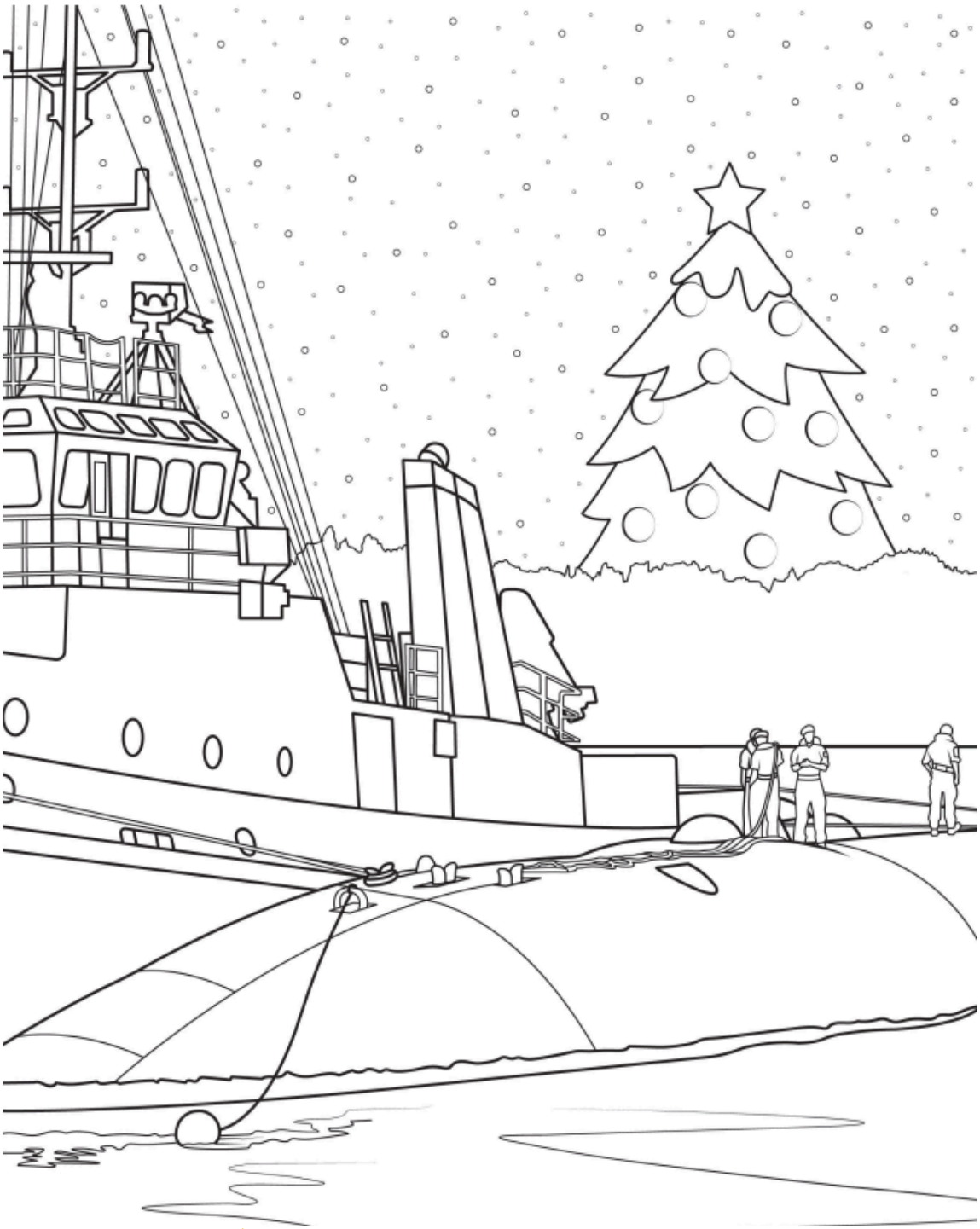
Teamwork
Robotics
School

What is an Engineer?

Imagine what an engineer does.
Draw your idea of engineering! When you finish your drawing, add labels or write a short sentence to explain what you've created.

Engineering is all about solving problems and making things work. Engineers design, build, and improve things. They use creativity and science to make life better for everyone.

Mission: Colour the Submarine



Did you know.....

Submarines can stay underwater for months at a time without coming up for air! They make their own oxygen and clean the air inside so the crew can breathe — it's like a mini underwater city!

Name That Job – Who Keeps the Power On?

What kind of jobs are needed to run a nuclear power station?

It takes a whole team of skilled people to keep everything safe, efficient, and running smoothly. **Can you match the job title to what they do?**

Nuclear Engineer	Oversees big upgrades or new builds, keeping everything on track.
Health Physicist	Protects the station's computer systems from hackers.
Project Manager	Makes sure radiation levels are safe for workers and the environment.
Cybersecurity Specialist	Designs and maintains systems that produce nuclear energy
Electrical Engineer	Ensures all safety rules are followed and risks are managed.
Safety Officer	Keeps the electrical systems running safely and efficiently

Did You Know?

The UK is building a new nuclear power station called Hinkley Point C (HPC). It's one of the biggest construction projects in Europe and will provide low-carbon electricity to around 6 million homes once it's finished!

Reindeer Replacement: Powering Santa's Sleigh!

Santa's reindeer have caught a festive case of the sniffles and won't be flying this Christmas Eve! Now it's up to YOU—our brilliant young inventors—to help save the holiday. Your mission: design a brand-new way to power Santa's sleigh and deliver presents across the globe using STEM skills.

🔍 The Challenge

Your task is to:

Invent a new sleigh propulsion system using science, technology, engineering, and maths.

Explain how it works—think about energy sources, movement, and how Santa will steer it!

Show off your idea through a creative presentation.

🛠️ How to Present Your Idea

Let your imagination soar! You can share your invention in any of the following ways (or come up with your own!):

🧱 A physical model using LEGO, cardboard, or recycled materials
🧭 A poster or blueprint showing your sleigh design
🎥 A short video or animation explaining your concept
💻A simple code simulation (e.g., using Scratch)

Send us your idea:
externalengagement.cavendishnuclear@cavendishnuclear.com

Reindeer Replacement - Designs

Energy Elf Quiz

Help the Energy Elf learn more about how we power the world — especially at Christmas! Choose the correct answer for each question.

What kind of energy does a nuclear power station produce?

A) Wind energy
B) Solar energy
C) Nuclear energy
D) Reindeer energy

Why is nuclear energy important in winter?

A) It helps grow Christmas trees
B) It keeps the lights on when it's cold
C) It powers sleigh bells
D) It melts snow

What is one benefit of nuclear power?

A) It makes glitter
B) It's low-carbon and helps fight climate change
C) It only works at Christmas
D) It's powered by elves

What might future nuclear reactors be like?

A) Bigger and slower
B) Smaller, safer, and faster to build
C) Made of gingerbread
D) Only used in the North Pole

Did you know?

One tiny uranium pellet - about the size of a jellybean - can produce as much energy as a whole ton of coal!
That's enough to power a home for nearly a month!

What will energy look like in 2050?

The way we power our homes, schools, and even Santa's sleigh is changing fast! Right now, we use energy from things like wind, solar, and nuclear power. But what will energy look like in the future?

Design the energy world of 2050!
Use the space below (or a separate sheet) to:

- **Draw what you think energy will look like in the future.**
- **Label your drawing with cool features (e.g. "Fusion-powered sleigh" or "Smart solar snow panels").**
- **Write a few sentences explaining your ideas.**

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