

# 7 Eureka!

## page 83

- 7.1 **nomination** (n) /nɒmɪ'neɪʃn/  
the act of officially suggesting sb for a prize, position, etc. • *My nomination for best sportsman is Usain Bolt.* > nominate (v)

## Word Focus

## page 84

- 7.2 **nickel** (n) /'nɪkəl/  
a hard silver-white metal • *Nickel is used to make the metal steel.*
- 7.3 **hardback** (n) /'hɑːdbæk/  
a book with a hard cover • *The hardback version of this book costs more but the harder cover will make it last longer.*  
📖 Opp: paperback
- 7.4 **kiln** (n) /kɪln/  
a large oven for baking bricks and clay  
• *The clay pots were heated in the kiln to harden them.*
- 7.5 **lunatic** (n) /'lʊnətɪk/  
a mad person • *The man who shot those innocent people must be a lunatic.*
- 7.6 **reinforce** (v) /rɪːɪn'fɔːs/  
make a structure or material stronger  
• *Nowadays we reinforce the materials we build with to make them stronger.*  
> reinforced (adj)
- 7.7 **MDF** (n) /em diː ef/  
boards made of wood fibres pressed together  
• *I bought an MDF table from IKEA.*  
📖 MDF = medium density fibreboard
- 7.8 **agility** (n) /æ'dʒɪlɪti/  
the ability to move in a quick and easy manner  
• *The agility of the gymnast impressed us all.*  
> agile (adj)

- 7.12 **transform** (v) /træns'fɔːm/  
change completely • *PCs transformed the world of work and entertainment.*  
> transformation (n)
- 7.13 **prophecy** (n) /'prɒfəsi/  
a prediction, often religious • *The prophecy that the world would end in 2012 did not come true.*

- 7.14 **machinery** (n) /mə'ʃɪːnəri/  
machines • *Tractors are essential farming machinery.*
- 7.15 **manual labour** (n) /'mænʃʊəl 'leɪbəl/  
work done by people with their own hands  
• *Manual labour is still used on fruit farms because people are needed to harvest the delicate berries.*
- 7.16 **seamstress** (n) /'siːmstrəs/  
a woman who makes and sews clothes  
• *The seamstress shortened the client's trousers.*
- 7.17 **seam** (n) /siːm/  
a line where two pieces of material are sewn together • *The seam on the arm of this sweater has come undone.*
- 7.18 **sewing machine** (n) /'səʊɪŋ mə'ʃɪːn/  
a device you can sew clothes with • *I made myself a new jacket on the sewing machine.*
- 7.19 **mundane** (adj) /mʌn'deɪn/  
ordinary and uninteresting • *I don't enjoy mundane chores like vacuuming and dusting.*
- 7.20 **automated** (adj) /'ɔːtəmeɪtɪd/  
using computers and machines to do a job  
• *Production in this factory is automated and workers supervise the machinery.*  
> automation (n)
- 7.21 **cost effective** (adj) /kɒst ɪ'fektɪv/  
giving the best benefit/profit compared to the money that is spent on sth • *Some employees were fired because the boss wanted to make the business more cost effective.*
- 7.22 **flexible** (adj) /'fleksɪbl/  
which bends easily • *This plastic ruler is flexible, so it won't break if you bend it.*  
> flexibility (n) 📖 Opp: inflexible, stiff
- 7.23 **give way** (expr) /gɪv weɪ/  
be replaced by sth • *Vinyl records gave way to CDs, which have given way to MP3 files.*
- 7.24 **curl up** (phr v) /kɜːl ʌp/  
sit comfortably with your legs close to your body so you are like a ball • *She curled up on the sofa with her favourite book.*

## Reading

## pages 84-85

- 7.9 **phonograph** (n) /'fəʊnəgrɑːf/  
a record player • *The phonograph allowed people to listen to recorded music.*
- 7.10 **irrigation screw** (n) /ɪrɪ'geɪʃn skruː/  
a device for lifting water, also known as Archimedes' screw • *The irrigation screw made watering crops much easier for farmers.*
- 7.11 **windscreen wiper** (n) /'wɪndskriːn 'waɪpəl/  
a device that cleans rainwater off the front window of a vehicle • *Use the windscreen wipers so you can see where you are driving in the rain.*

- 7.25 construction** (n) /kən'strʌkʃn/  
the process of building • *The construction of the building took twelve months.*  
> construct (v)
- 7.26 steel bar** (n) /sti:l bɑ:z/  
a long straight piece of metal made of steel, often used in buildings • *Steel bars were used to support the weight of the loft extension.*
- 7.27 mansion** (n) /'mænjən/  
a very large house • *The celebrity lived in a mansion in Beverly Hills.*
- 7.28 frame** (n) /freɪm/  
a structure that surrounds sth like a picture or window and holds it in place • *The frame of the window was made of aluminium.*
- 7.29 poverty** (n) /'pɒvəti/  
the state of being very poor • *There was a lot of poverty in the country because so many people had no work.* > poor (adj)  
📖 Opp: wealth
- 7.30 proclaim** (v) /prəʊ'kleɪm/  
announce • *The prime minister proclaimed on the news that he believed in higher taxes for the rich.*
- 7.31 do away with** (phr v) /du: ə'weɪ wɪð/  
get rid of • *Do you think people will do away with cars to ride bikes instead?*
- 7.32 spot on** (expr) /spɒt ɒn/  
perfectly correct • *Your prediction about good weather today was spot, on so let's go for a walk.*
- 7.33 artificial** (adj) /ɑ:tɪ'fɪʃl/  
not natural but man-made • *Artificial intelligence is used with voice recognition programs on computers.*
- 7.34 bumblebee** (n) /'bʌmbl,bi:z/  
a large hairy bee • *The bumblebee buzzed around the spring flowers.*
- 7.35 aviation** (n) /,eɪvɪ'eɪʃn/  
the business of flight • *Aviation has made it much easier to travel around the world.*  
> aviator (n)
- 7.36 substitute** (n) /'sʌbstɪ'tju:t/  
a replacement • *She uses a sugar substitute to sweeten her coffee as it is not fattening.*  
> substitute (v)
- 7.37 sector** (n) /'sektə/  
an area of activity • *My dad works in the public sector. He's a civil servant.*
- 7.38 workforce** (n) /'wɜ:kfɔ:s/  
the people who work for a particular organisation • *The company is going to fire ten per cent of its workforce.*
- 7.39 acquire** (v) /ə'kwɪə/  
gain; obtain • *The family have acquired great wealth and many possessions over the generations.* > acquisition (n)

- 7.40 aviator** (n) /'eɪvɪeɪtə/  
sb who flies a plane • *Amelia Earhart was a great aviator who tried to fly around the world.*  
> aviation (n)
- 7.41 prosthetic** (n) /prəʊ'sθetɪk/  
an artificial part of the body • *He was able to walk again after his accident thanks to prosthetics.* > prosthetic (adj)
- 7.42 limb** (n) /lɪm/  
an arm or leg • *She broke all four limbs when she fell off the balcony.*

### Building

construction	mansion
frame	steel bar

### Phrasal verbs


curl up	do away with
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## Vocabulary

pages 86-87

- 7.43 remodel** (v) /rɪ:'mɒdəl/  
change the structure of sth • *The farm buildings were remodelled to accommodate pigs as well as cows.*
- 7.44 revolutionise** (v) /revə'lju:ʃənaɪz/  
completely change • *Flight revolutionised the way we travel.* > revolution (n), revolutionary (adj)
- 7.45 stimulate** (v) /'stɪmjʊleɪt/  
make sth develop; encourage • *The fascinating documentary stimulated my interest in geography.*  
> stimulation (n)
- 7.46 apparatus** (n) /æpə'reɪtəs/  
equipment for experiments • *We prepared the apparatus for our chemistry experiment.*
- 7.47 utensil** (n) /ju:'tensəl/  
a piece of equipment for cooking and eating, a knife or a spoon, etc.  
• *I need some new cooking utensils, especially spatulas.*
- 7.48 computerised** (adj) /kəm'pjʊtəraɪzd/  
using a computer to control the way sth is done • *This computerised system requires internet access.* > computer (n), computerise (v)
- 7.49 mechanical** (adj) /mɪ'kænɪkl/  
using an engine or machine to do work  
• *This mechanical egg timer runs on batteries.*  
> mechanism (n)
- 7.50 assumption** (n) /ə'sʌmpʃn/  
sth you think is true even though you have no proof • *Your assumption that I am a pensioner is wrong as I am only 55.* > assume (v)

- 7.51 discard** (v) /dɪs'kɑ:d/  
throw away • *She looked through her old magazines to decide which to keep and which to discard.*
- 7.52 filter** (v) /'fɪltə/  
remove unwanted substances from water, air, etc. by passing it through a piece of equipment  
• *This ioniser filters the air so it is dust-free.*  
➢ filter (n)
- 7.53 purify** (v) /'pjʊərɪfaɪ/  
remove harmful substances from sth  
• *The water sold in these bottles is purified so you can drink it.* ➢ purification (n)
- 7.54 sterilise** (v) /'sterɪlaɪz/  
clean sth completely by killing any bacteria in it • *You should sterilise the bottles before making milk formula for the baby to drink.*  
➢ sterilisation (n)
- 7.55 cube** (n) /kju:b/  
an object with six equal square sides  
• *The dice we used to play Monopoly were red cubes.* ➢ cubic (adj)
- 7.56 cylinder** (n) /'sɪlɪndə/  
an object with straight sides and circular ends  
• *Roll up the poster and keep it in this cylinder.*  
➢ cylindrical (adj)
- 7.57 rectangle** (n) /'rektæŋgl/  
a shape with four sides, two of which are longer than the other two, and four 90° angles at the corners • *I prefer this wallet; it's a rectangle, so the notes don't get bent in it.*  
➢ rectangular (adj)
- 7.58 sphere** (n) /sfɪə/  
a round shape like a ball • *Did you know that Earth is not a perfect sphere?*  
➢ spherical (adj)
- 7.59 displace** (v) /dɪs'pleɪs/  
take the place of sb/sth • *The ice I dropped in the glass displaced the water and made it spill over the rim.* ➢ displacement (v)
- 7.60 copper** (n) /'kɒpə/  
a reddish-brown metal • *The saucepan is made of copper.*
- 7.61 conductor** (n) /kən'dʌktə/  
sth that allows electricity to pass through it  
• *Copper is an excellent conductor of electricity and is used to make electrical wires.*  
➢ conduct (v)
- 7.62 monitor** (n) /'mɒnɪtə/  
sth that checks the progress of sth  
• *The patient was attached to a heart monitor to make sure he remained stable.*  
➢ monitor (v)
- 7.63 component** (n) /kəm'pəʊnənt/  
one of the parts of which sth is made • *We need to replace one of the components of the machine.*
- 7.64 periodic table** (n) /pɪərɪ'ɒdɪk 'teɪbl/  
a list of elements arranged according to their atomic structure • *We learned the gases on the periodic table in chemistry.*
- 7.65 corrode** (v) /kə'rəʊd/  
If metal corrodes, it is destroyed by the action of water or chemicals. • *Acids corrode metal.* ➢ corrosion (n), corrosive (adj)
- 7.66 erode** (v) /ɪ'rəʊd/  
If the soil or rock is eroded by the weather, its surface is destroyed gradually. • *The river is widening because the water flow erodes the river banks.* ➢ erosion (n)
- 7.67 unstable** (adj) /ʌn'steɪbl/  
changeable • *The unstable chemical was handled very carefully by the scientist.*  
➢ instability (n)
- 7.68 explosive** (n) /ɪks'pləʊsɪv/  
a substance that can cause an explosion  
• *Explosives which could be used to make bombs were found in the terrorist's hideout.* ➢ explode (v), explosion (n)
- 7.69 expand** (v) /ɪks'pænd/  
become bigger • *Metals expand when they are heated.* ➢ expansion (n) ☞ Opp: contract
- 7.70 extend** (v) /ɪk'stend/  
become longer • *The bank extended the time he had to pay back the loan.* ➢ extent (n), extension (n), extensive (adj)
- 7.71 dense** (adj) /dens/  
A dense substance has a lot of mass in relation to its size. • *Ice floats because it is less dense than water.* ➢ density (v)
- 7.72 erupt** (v) /ɪ'rʌpt/  
When a volcano erupts, it explodes and sends smoke, rocks, lava and ash into the sky. • *Mount Etna erupted again last month.*  
➢ eruption (n)
- 7.73 liquefied** (adj) /'lɪkwɪfaɪd/  
turned into liquid • *The lorry was transporting liquefied gas to be used for heating.*  
➢ liquefy (v), liquid (n), liquefaction (n)
- 7.74 gemstone** (n) /'dʒemstəʊn/  
a precious stone; a jewel • *Her favourite gemstones are diamonds.*
- 7.75 purity** (n) /'pjʊərɪti/  
containing nothing wrong or harmful  
• *The purity of this diamond increases its value.* ➢ pure (adj)
- 7.76 antiquity** (n) /æn'tɪkwɪti/  
the distant past • *The Parthenon is one of antiquity's most famous monuments.*
- 7.77 derive** (v) /dɪ'reɪv/  
get from • *The Mercedes derives its name from a relative of the designer.*  
➢ derivative (n)

- 7.78 flawless** (adj) /'flɔːləs/  
perfect • *This flawless gemstone is absolutely beautiful.* > flaw (n)
- 7.79 control panel** (n) /kən'trəʊl 'pænəl/  
sth that allows computer users to view and manipulate hardware, add and remove software, etc. • *You can customise your computer settings by going to the control panel.*
- 7.80 assembly line** (n) /æ'sembli laɪn/  
a system for making things in a factory: the things move past a line of workers who each make one part • *Working on an assembly line is monotonous.*
- 7.81 fraction** (n) /'frækʃn/  
very small amount • *It took a fraction of a second for the cat to pounce on the mouse.*
- 7.82 innovation** (n) /ɪnə'veɪʃn/  
a new idea or thing being used for the first time • *Smartphones are the latest innovation on the market.* > innovative (adj)
- 7.83 plant** (n) /plɑːnt/  
a factory • *This plant produces cars and other vehicles.*
- 7.84 efficient** (adj) /ɪ'fɪʃnt/  
working well, without wasting time, energy or money • *Emma is a very efficient secretary; you can rely on her to do the work well.* > efficiency (n)  Opp: inefficient
- 7.85 assemble** (v) /ə'sembəl/  
put together the parts of sth • *I found it difficult to assemble the wardrobe.* > assembly (n)
- 7.86 reinvent the wheel** (expr) /'riːɪn,vent ðə wiːl/  
waste time trying to develop sth that has already been done • *We don't need to reinvent the wheel; we already have a perfectly good system in place.*
- 7.87 forefront** (n) /'fɔːfrʌnt/  
first place • *Japan is at the forefront of robotic research with new ideas.*
- 7.88 cutting edge** (n) /'kʌtɪŋ edʒ/  
the most advanced stage in the development of sth • *Our factory is at the cutting edge as regards the technology we use to make computers.*
- 7.89 get your wires crossed** (expr)  
/get jɔː 'waɪəz krɒst/  
become confused about what sb is saying because you think they are talking about sth else • *We got our wires crossed and went to different places to meet.*
- 7.90 light years ahead** (expr) /laɪt jɪəz æ'hed/  
a long way ahead of others • *His brilliant ideas are light years ahead of other researchers.*
- 7.91 glitch** (n) /glɪtʃ/  
a small problem • *You can solve this glitch by restarting your computer.*

- 7.92 push the panic button** (expr)  
/pʊʃ ðə 'pænik 'bʌtən/  
become frightened or worried • *Don't push the panic button whenever you have trouble with your laptop.*
- 7.93 instruction manual** (n) /ɪn'strʌkʃn 'mænjʊəl/  
a book that tells you how to do or use sth • *You need to read the instruction manual to see how the machine works.*
- 7.94 not rocket science** (expr) /nɒt 'rɒkɪt 'saɪəns/  
not difficult to understand • *This chapter on levers in your physics textbook is not rocket science, so you'll understand it easily.*
- 7.95 lung** (n) /lʌŋ/  
one of the two organs in your chest that you use to breathe • *If you smoke, you run the risk of getting lung cancer.*
- 7.96 particle** (n) /'pɑːtɪkl/  
a very small piece • *The atmosphere was full of particles of dust from the Sahara desert.*
- 7.97 coin** (v) /kɔɪn/  
invent a word or phrase • *People first coined the word 'wireless' for radios.*
- 7.98 solely** (adv) /'səʊli/  
only • *He is solely responsible for the accident. No one else is to blame.* > sole (adj)

### Mechanisation

assembly line	machinery
automated	mechanical
computerised	plant

### Physics and Chemistry

verbs	adjectives	nouns
corrode	dense	apparatus
displace	liquefied	conductor
expand	unstable	periodic table

## Grammar

pages 88-89

- 7.99 split an atom** (expr) /splɪt æn 'ætəm/  
divide the smallest part of a chemical element • *A nuclear reaction is the result of splitting an atom.*
- 7.100 disprove** (v) /dɪs'pruːv/  
show sth is not true • *The scientist disproved the old theory with new findings.*
- 7.101 grant** (n) /grɑːnt/  
money you get from sb for a particular purpose • *He got a grant to pay for his university studies.*
- 7.102 bronze** (n) /brɒnz/  
a yellowish-brown metal • *The statue was made of bronze.*



- 7.103 tin** (n) /tɪn/  
a silvery-white metal • *This food can be made of tin.*
- 7.104 artefact** (n) /'ɑ:tɪfækt/  
an object like a tool that was made in the past and is historically interesting  
• *We examined the Roman artefacts in the museum exhibition.*
- 7.105 hue** (n) /hjuː/  
a colour • *The morning sky was a pale blue hue.*
- 7.106 satellite** (n) /'sætələɪt/  
a machine that goes around the Earth and is used for electronic communications  
• *Satellites are essential for worldwide telecommunications.*
- 7.107 reflective** (adj) /rɪ'flektɪv/  
able to send light back • *The reflective surface of a mirror was flawed by a crack.*  
> reflect (v)
- 7.108 surface** (n) /'sɜ:fɪs/  
the top part of sth • *There was rubbish floating on the surface of the sea.*
- 7.109 engineer** (n) /,endʒɪ'nɪə/  
sb whose job is to design and build roads, bridges, engines, etc. • *She wants to study to be an engineer when she leaves school.*  
> engineering (n), engine (n)
- 7.110 craft** (n) /krɑ:ft/  
a boat or a plane • *The old fisherman designed and built his craft himself.*
- 7.111 nuclear reactor** (n) /'njuːklɪə rɪ'æktə/  
a machine used to produce nuclear energy  
• *This power plant uses a nuclear reactor to produce electricity.*
- 7.112 geyser** (n) /'giːzə/  
a natural spring that sends hot water or steam into the air • *Don't go near the geyser. You might get burnt.*
- 7.113 nail** (n) /neɪl/  
the thin hard layer that covers the tip of a finger or toe • *Maria bites her nails when she is nervous.*
- 7.114 appliance** (n) /ə'plaɪəns/  
a machine like a cooker, fridge or iron that is designed to do a particular job in the home  
• *This shop sells a wide range of electrical appliances.*
- 7.115 spiral out of control** (expr) /'spɑɪrəl aʊt əv kən'trəʊl/  
quickly get out of control • *The situation spiralled out of control and there was chaos.*
- 7.116 malfunction** (v) /mæl'fʌŋkʃn/  
work incorrectly • *The DVD player is malfunctioning again, so we can't watch a movie.* > malfunction (n)

## Metals

bronze	steel
copper	tin
nickel	

## Listening

page 90

- 7.117 solar panel** (n) /'səʊləl 'pænl/  
piece of equipment which uses the sun's heat to make energy • *We have a solar panel on the roof which heats our water.*
- 7.118 sustainable** (adj) /sʌs'teɪnəbl/  
able to continue for a long time and not deplete natural resources • *Wind power is a sustainable form of energy as opposed to fossil fuels, which are running out.*  
> sustain (v) ☞ Opp: unsustainable
- 7.119 tile** (n) /taɪl/  
a flat piece of clay on a wall, floor or roof  
• *She dried the tiles on the bathroom wall after having a shower.*

## Inventions

irrigation screw	satellite
MDF	sewing machine
nuclear reactor	solar panel
phonograph	windscreen wiper

## Speaking

page 91

- 7.120 restrict** (v) /rɪ'strɪkt/  
limit • *Parking here is restricted to residents only.* > restriction (n)
- 7.121 ultrasound** (n) /'ʌltrəsaʊnd/  
a medical process that uses a sound that is too high for humans to hear in order to produce an image of the inside of your body  
• *The doctor needs an ultrasound to find out what is wrong with him.*
- 7.122 scan** (n) /skæn/  
a medical test in which a special machine produces an image of the inside of your body:  
• *The doctor looked at a scan of the man's lungs.* > scan (v)

## Writing: a nomination

pages 92-93

- 7.123 worthy** (adj) /'wɜ:ði/  
deserving • *He donated money to a worthy charity.* > worth (n) ☞ Opp: unworthy

- 7.124 evaluation** (n) /ɪvælju'eɪʃn/  
making a judgement • *Students received a fair evaluation of their progress at the end of the first term.* > evaluate (v)
- 7.125 justification** (n) /dʒʌstɪfɪ'keɪʃn/  
a good reason for doing sth • *The justification for higher prices is the increased cost of production.* > justify (v)
- 7.126 curiosity** (n) /kɪjʊərɪ'ɒsɪti/  
desire to know • *His curiosity about the formation of the Earth led him to become a geologist.* > curious (adj)
- 7.127 lay the foundations** (expr)  
/leɪ ðə fəʊn'deɪʃnz/  
provide the conditions that will make it possible for sth to be successful • *The Wright brothers laid the foundations for the development of aviation.*
- 7.128 enquiring mind** (expr) /ɪn'kwəɪərɪŋ maɪnd/  
sb with an enquiring mind is interested in finding out more about everything  
• *An enquiring mind is essential for somebody who wants to go into research.*
- 7.129 pave the way** (expr) /peɪv ðə weɪ/  
create the conditions for sth to continue  
• *Walt Disney paved the way for future animation movies.*
- 7.130 reputation** (n) /repju'teɪʃn/  
the opinion people have of sb • *Francis Ford Coppola has a reputation as a great director.*  
> reputable (adj)
- 7.131 chart** (v) /tʃæt/  
make a map • *Early explorers charted the sea and land as they travelled and created the first maps.* > chart (n)
- 7.132 shine light on sth** (expr)  
/ʃaɪn laɪt ɒn 'sʌmθɪŋ/  
reveal sth new • *Exploration on Mars will shine light on the formation of other planets.*
- 7.133 glimpse** (n) /glɪmpz/  
a momentary look at sb/sth • *I caught a glimpse of a fish before it swam away.*  
> glimpse (v)
- 7.134 occurrence** (n) /ə'kʌrəns/  
sth that happens • *Earthquakes are a regular occurrence in this area.* > occur (v)
- 7.135 victim** (n) /'vɪktɪm/  
sb who is hurt or killed • *The victim of the shooting is being treated in hospital.*
- 7.136 impose** (v) /ɪm'pəʊz/  
have a bad effect on sb/sth • *Climbing in freezing conditions imposed challenges on the men.*
- 7.137 anglerfish** (n) /'æŋglə,fɪʃ/  
a fish that attracts its prey with a fleshy structure hanging from a thin filament on its head • *The divers watched the anglerfish catch its prey and then eat it.*
- 7.138 eel** (n) /i:l/  
a long fish like a snake • *The eel hid in an underwater cave.*
- 7.139 drowning** (n) /'draʊənɪŋ/  
dying from being under water for too long  
• *The victim of the drowning was not a strong swimmer.* > drown (v)
- 7.140 facet** (n) /'fæsɪt/  
an aspect • *A walk in the poorer areas of town revealed facets of life she had never seen before.*
- 7.141 discrete** (adj) /dɪs'kri:t/  
separate from other things • *The photos of discrete areas of the seabed fascinated researchers.*

## Video 7: Lighting the Dark

page 94