

XII. Wetenschap en onderwijs

63. Bezig zijn op geestelijk en wetenschappelijk gebied (vgl 30)

Basisvocabulary: ability, advance, advice, certainty, civilization, conviction, discovery, education, effect, examination, example, experience, experiment, expert, explanation, exploration, explorer, expression, extent, failure, idea, improvement, instruction, instrument, invention, inventor, imagination, issue, knowledge, language, library, mind, nonsense, observation, plan, press, reference, report, review, science, scientist, source, speech, study, system, terms, test, thought, tongue, translation, trial, university, word – to acquaint, to acquire, to advance, to advise, to discover, to educate, to examine, to experience, to experiment, to explain, to explore, to express, to fail, to imagine, to improve, to invent, to know, to learn, to observe, to print, to refer, to repeat, to review, to speak, to test, to think, to translate, to try, to word, to write – able, attentive, excellent, expert, fair, impossible, responsible, scientific, stupid, thorough.

scholar ['skɒlə]	leerling, <i>maar ook:</i> geleerde
scholarship	geleerdheid, <i>maar ook:</i> studiebeurs
learning; culture ['kʌltʃə]	geleerdheid, wetenschap; cultuur
research; discoverer	(wetenschappelijk) onderzoek; ontdek-
investigation	onderzoek, naspeuring [ker
technical term	vakuitdrukking
treatise ['tri:tiz, of -is]	verhandeling
theory ['θiəri]	theorie
method ['meθəd]	methode
procedure [prə'si:dʒə]	methode, werkwijze
proceeding	handelwijze, gedragslijn
illusion	illusie, zinsbedrog
precision	nauwkeurigheid
ignorance	onwetendheid
stupidity	domheid
utility	nut, bruikbaarheid
wit(s)	verstand; wit <i>ook:</i> geestig iemand
notion	begrip, denkbeeld
to investigate	onderzoeken naspeuren
to confirm	bevestigen, bekrachtigen
to specify ['spesifal]	specificeren, precies opgeven
to utilize ['ju:tilaiz]	benutten, nuttig aanwenden
to proceed (to)	voortgaan; overgaan (tot)
to ignore	niet willen weten; negeren
learned ['lə:nid]	geleerd
cultural	cultureel
technical ['teknikəl]	technisch
imaginable	denkbaar
precise [pri'sais]	juist, nauwkeurig; <i>ook:</i> overprecies
planless	stelselloos
spiritual	geestelijk, onstoffelijk
witty	geestig
ignorant (of)	onwetend, onontwikkeld; onbekd (met)
feeble-minded	zwakzinnig, <i>ook:</i> besluiteloos
obvious ['ɒbvjəs]	voor de hand liggend, duidelijk
distinctly, plainly	duidelijk; ronduit

Zinnen en uitdrukkingen: *to do research work* wetenschappelijk onderzoek verrichten; *to make thorough investigations* grondige naspeuringen verrichten; *he has no appreciation for art* hij heeft geen gevoel voor kunst; *to make oneself understood* zich verstaanbaar (begrijpelijk) maken; *he has a very keen mind* hij heeft een scherp verstand; *what gives you that idea?* hoe kom je op die gedachte?; *he has no conception of what we are doing* hij heeft er geen begrip van waar wij mee bezig zijn; *it just occurs to me that...* het valt me net in dat...; *he hasn't formed an opinion about that yet* hij heeft zich daar nog geen mening over gevormd; *in proof (of; in support) of this* als bewijs hiervoor; *after careful consideration* na rijp beraad; *to this end* met dit doel; *assuming this to be true* aangenomen dat dit juist is; *to know from experience* uit ervaring weten; *your plan is excellent in theory* in theorie is uw plan uitstekend; *to exercise an influence on...* invloed uitoefenen op...

52 Science and technology

A

You are probably familiar with the traditional branches of science e.g. chemistry, physics, botany and zoology. But what about these newer fields?

genetic engineering: the study of the artificial manipulation of the make-up of living things

molecular biology: the study of the structure and function of the organic molecules associated with living organisms

cybernetics: the study of the way information is moved and controlled by the brain or by machinery

information technology: the study of technology related to the transfer of information (computers, digital electronics, telecommunications)

bioclimatology: the study of climate as it affects humans

geopolitics: study of the way geographical factors help to explain the basis of the power of nation states

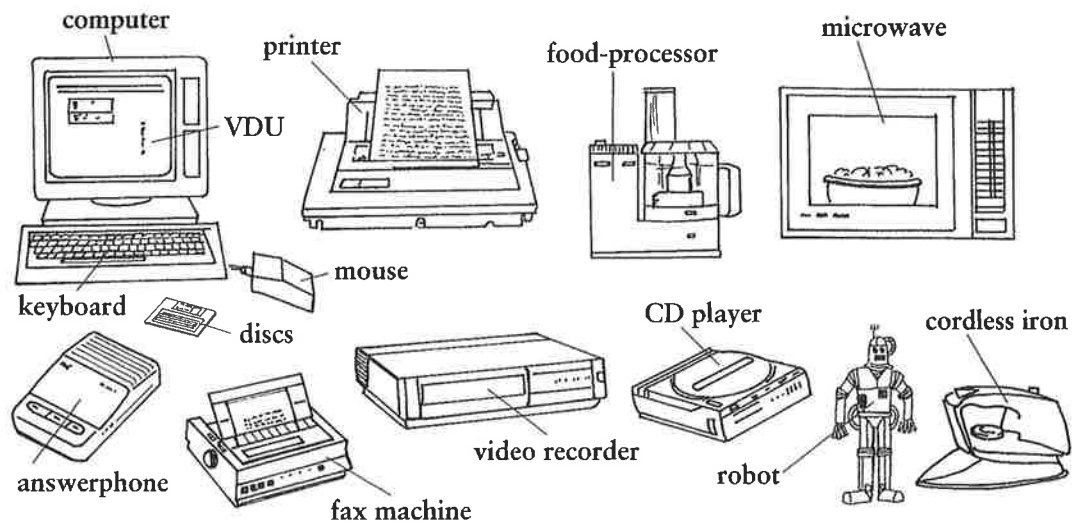
nuclear engineering: the study of the way nuclear power can be made useful

cryogenics: the study of physical systems at temperatures less than 183° C

astrophysics: the application of physical laws and theories to stars and galaxies

B

Here are some of the modern inventions which we are now becoming quite used to.



C

The verbs in the sentences below are all useful in scientific contexts.

He **experimented** with a number of different materials before **finding** the right one.

The technician **pressed** a button and lights started **flashing**.

When she **pulled** a lever, the wheel began to **rotate**.

The zoologist **dissected** the animal.

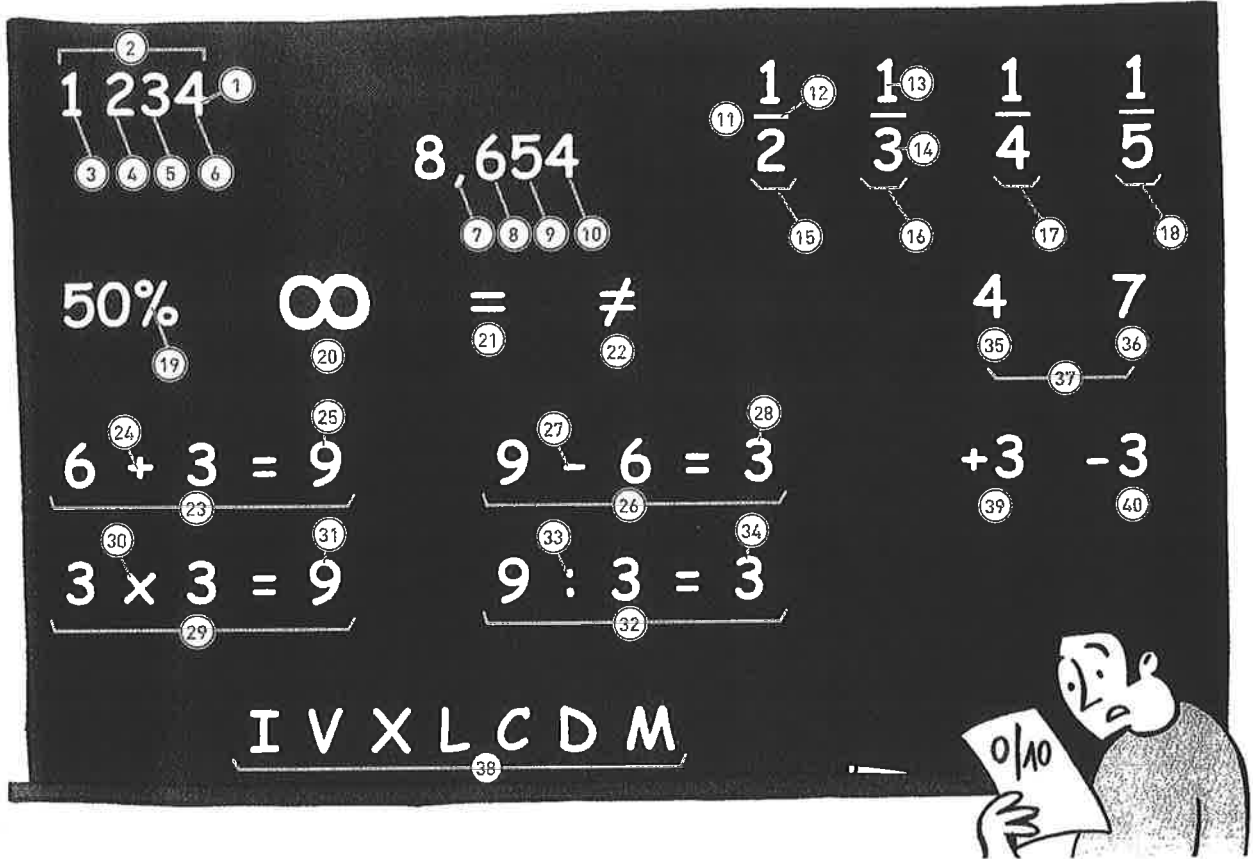
When they were **combined**, the two chemicals reacted violently with each other.

After **analysing** the problem, the physicist **concluded** that there was a flaw in his initial hypothesis.

James Watt **invented** the steam engine and Alexander Fleming, another Scot, **discovered** penicillin.

After **switching on** the computer, insert a floppy disc into the disc drive.

You must **patent** your invention as quickly as possible.



- ① digit
- ② number, figure



- ③ a thousand
- ④ a hundred
- ⑤ a ten
- ⑥ a one, a unit
- ⑦ decimal point
- ⑧ tenth
- ⑨ hundredth

- ⑩ thousandth
- ⑪ fraction
- ⑫ line
- ⑬ numerator
- ⑭ denominator
- ⑮ a half
- ⑯ a third
- ⑰ a fourth
- ⑱ a fifth
- ⑲ percentage
- ⑳ infinity sign
- ㉑ equals sign, is equal to

- ㉒ is not equal to
- ㉓ addition
- ㉔ plus sign
- ㉕ sum
- ㉖ subtraction
- ㉗ minus sign
- ㉘ difference
- ㉙ multiplication
- ㉚ multiplication sign
- ㉛ product
- ㉜ division
- ㉝ division sign
- ㉞ quotient



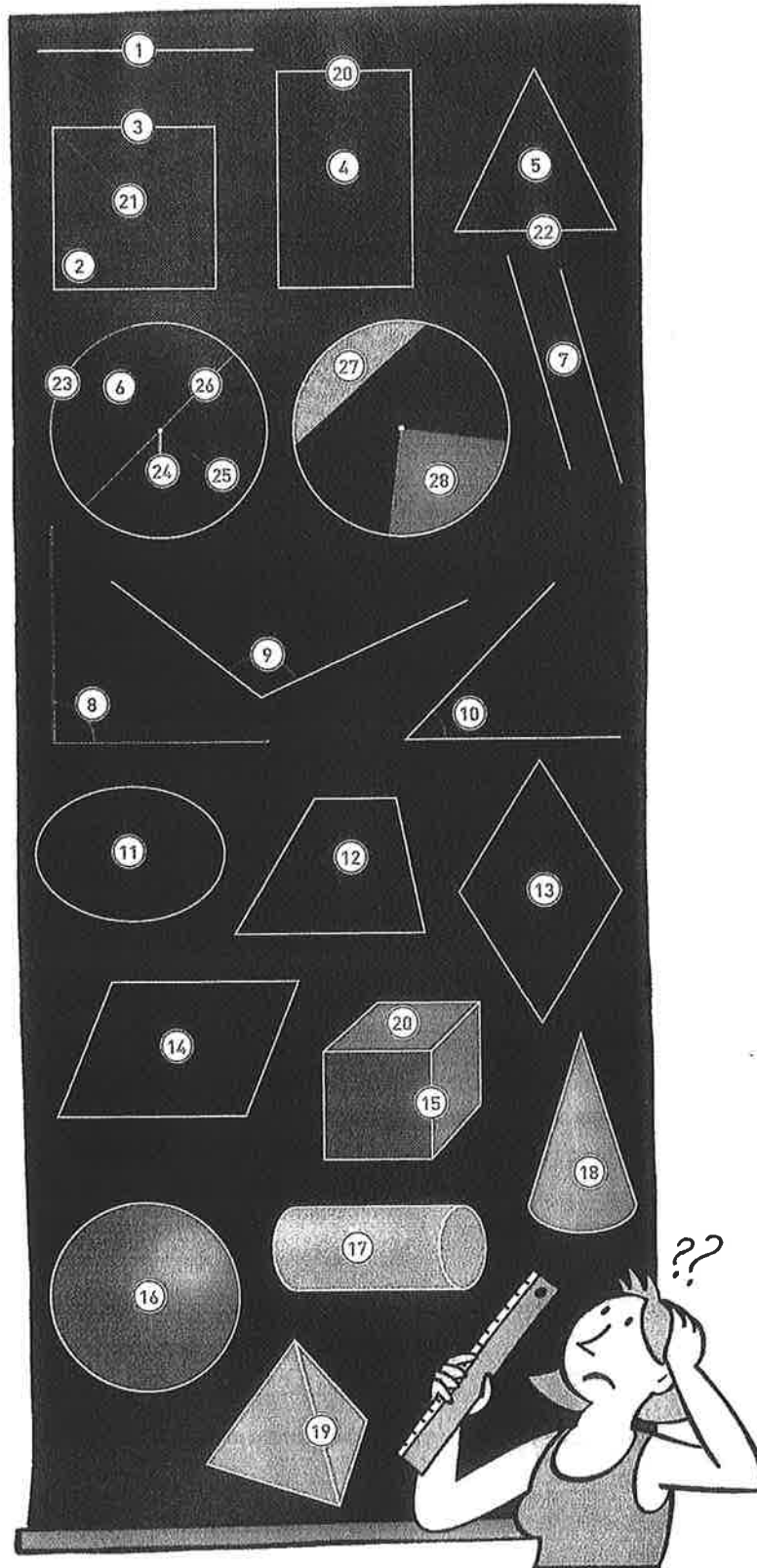
- ㉟ even number
- ㊱ odd number
- ㊲ Arabic numeral
- ㊳ Roman numeral
- ㊴ positive number
- ㊵ negative number

Words in Action

- A Is the sum of these numbers 11?
- B No, it's 12.
- A Is that an even or an odd number?
- B An even number, **you silly!**

Variations (insult)

- You silly!
- You stupid!
- What a fool you are!
- You idiot!
- You nitwit!



- ① line
- ② angle
- ③ square
- ④ rectangle
- ⑤ triangle
- ⑥ circle



- ⑦ parallel lines
- ⑧ right angle
- ⑨ obtuse angle
- ⑩ acute angle
- ⑪ ellipse, oval
- ⑫ trapezium, trapezoid
- ⑬ rhombus
- ⑭ parallelogram
- ⑮ cube
- ⑯ sphere
- ⑰ cylinder
- ⑱ cone
- ⑲ pyramid



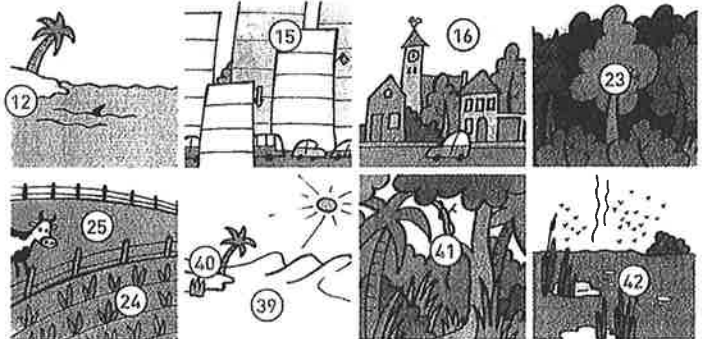
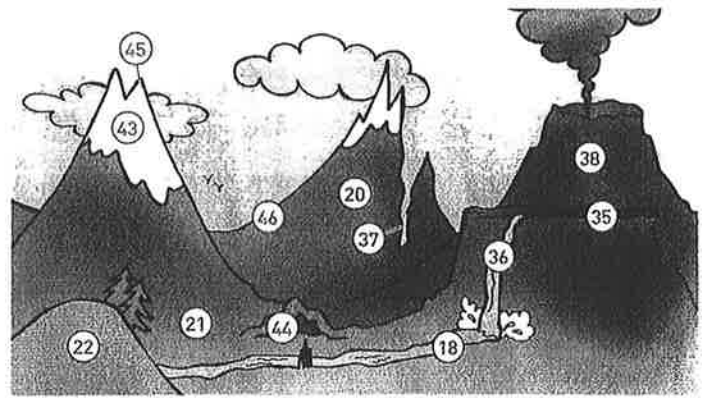
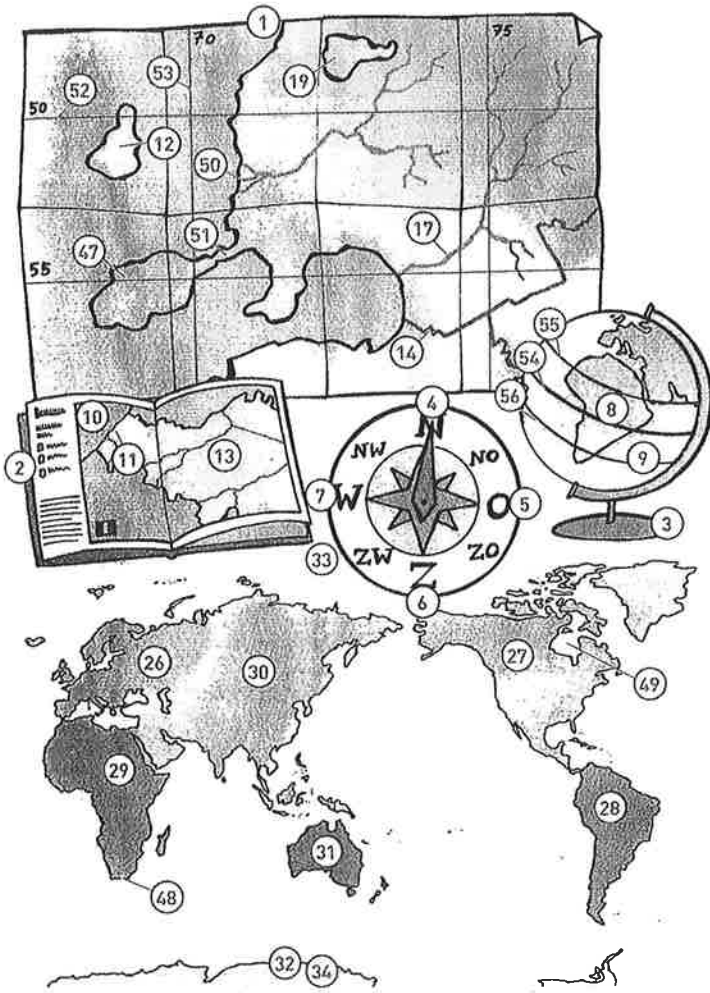
- ⑳ side
- ㉑ diagonal
- ㉒ basis
- ㉓ arc
- ㉔ centre
- ㉕ radius
- ㉖ diameter
- ㉗ segment
- ㉘ sector

Words in Action

- A Look, a square has 4 right angles. Do you understand?
 B You will be right.

Variations (checking understanding)

- Do you understand?
 Do you get my point?
 Do you get that?
 Can you follow?



- 1 map
- 2 atlas
- 3 globe
- 4 north
- 5 east
- 6 south
- 7 west
- 8 continent
- 9 ocean
- 10 sea
- 11 coastline
- 12 island
- 13 country
- 14 boundary, border

- 15 city
- 16 village
- 17 river
- 18 brook
- 19 lake
- 20 mountain
- 21 valley
- 22 hill
- 23 forest, woods (pl.)
- 24 field
- 25 meadow

- 26 Europe
- 27 North America

- 28 South America
- 29 Africa
- 30 Asia
- 31 Oceania
- 32 Antarctica
- 33 North Pole
- 34 South Pole
- 35 plateau
- 36 waterfall, falls (pl.)
- 37 ravine, gorge
- 38 volcano
- 39 desert
- 40 oasis
- 41 jungle, primaeval forest , primeval forest
- 42 swamp, marsh, bog
- 43 glacier
- 44 cave

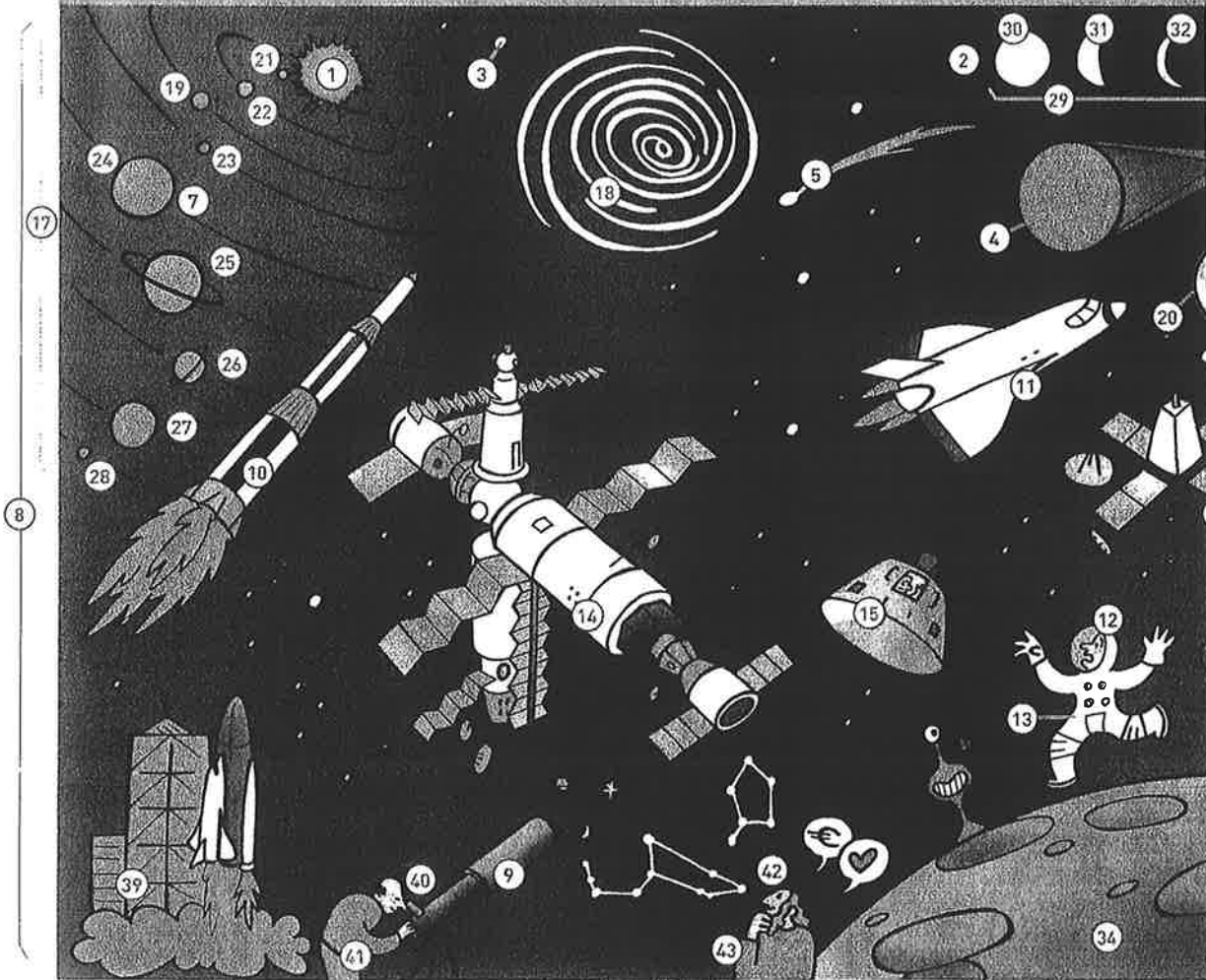
- 45 peak, summit, top
- 46 slope
- 47 peninsula
- 48 cape
- 49 bay
- 50 river mouth, estuary, delta
- 51 isthmus
- 52 line of latitude
- 53 line of longitude
- 54 Equator
- 55 Tropic of Cancer
- 56 Tropic of Capricorn

Words in Action

- A Why don't we go to the mountains?
You can have nice walks there.
- B Could be, but I'd like to visit an island.

Variations (restrictions)

- Could be, but ...
- Exactly, but ...
- I suppose so, but ...



- ① sun
- ② moon
- ③ star
- ④ planet
- ⑤ comet
- ⑥ meteor
- ⑦ celestial body
- ⑧ universe, cosmos
- ⑨ telescope
- ⑩ rocket
- ⑪ space shuttle, spacecraft
- ⑫ astronaut



- ⑬ spacesuit
- ⑭ space station
- ⑮ space capsule
- ⑯ satellite
- ⑰ solar system
- ⑱ Milky Way
- ⑲ earth
- ⑳ orbit
- ㉑ Mercury
- ㉒ Venus
- ㉓ Mars
- ㉔ Jupiter
- ㉕ Saturn
- ㉖ Uranus
- ㉗ Neptune
- ㉘ Pluto



- ㉙ phases of the moon
- ㉚ full moon
- ㉛ half moon
- ㉜ crescent
- ㉝ new moon
- ㉞ lunar surface, lunar features (pl.)
- ㉟ crater
- ㊱ solar eclipse
- ㊲ atmosphere
- ㊳ stratosphere
- ㊴ launch pad
- ㊵ astronomy
- ㊶ astronomer
- ㊷ astrology
- ㊸ astrologer

Words in Action

- A Do you know much about space?
 B Well, I know the difference between the sun and the moon.
 A Do you know what a comet is?
 B Let's talk about something else.

Variations (avoiding an answer)



- Let's talk about something else.
 Shall we talk about something else?
 By the way, have you heard...
 Right, let's have some coffee...

Laboratory



**

- ① laboratory assistant
- ② experiment
- ③ funnel
- ④ flask
- ⑤ watchglass
- ⑥ beaker
- ⑦ graduated cylinder
- ⑧ magnet
- ⑨ safety goggles,
protective goggles
- ⑩ magnifying glass
- ⑪ microscope
- ⑫ gauge ,
gage 

- ⑬ pointer
- ⑭ thermometer
- ⑮ balance,
scales (pl.) ,
scale 
- ⑯ laboratory animal

- ⑰ test tube
- ⑱ stoppered bottle
- ⑲ erlenmeyer flask
- ⑳ litmus paper
- ㉑ stirring rod
- ㉒ pipette
- ㉓ mortar
- ㉔ pestle
- ㉕ Bunsen burner
- ㉖ lens
- ㉗ glass slide
- ㉘ eyepiece

Words in Action

- A What are you doing?
 B An experiment. I'm now taking the flask.
Could you take the Bunsen burner?
 A It isn't dangerous, is it?

Variations (requests)

- Could you take ...?**
Could you give me ...?
Could you pass me ...?
May I ...?



Mammals



- ① dog
- ② cat, tom cat (male)
- ③ cow
- ④ bull, ox
- ⑤ horse
- ⑥ donkey
- ⑦ pony
- ⑧ sheep (sheep)
- ⑨ goat
- ⑩ pig
- ⑪ rabbit
- ⑫ hare
- ⑬ guinea pig
- ⑭ hamster
- ⑮ mouse (mice)
- ⑯ rat
- ⑰ mole
- ⑱ fox
- ⑲ wolf
- ⑳ ape
- ㉑ bear
- ㉒ elephant
- ㉓ lion
- ㉔ tiger



- ㉕ pup, puppy
- ㉖ calf (calves)
- ㉗ foal, colt, filly (female)
- ㉘ lamb
- ㉙ piglet
- ㉚ leg, foot, paw
- ㉛ head
- ㉜ muzzle



- ㉝ mane (sing.)
- ㉞ hoof
- ㉟ horseshoe
- ㊱ claw
- ㊲ whiskers (pl.)
- ㊳ trunk
- ㊴ tusk

Words in Action

- A Do you keep animals at home?
 B Oh yes, I have a dog, 2 cats, chickens and rabbits.
 A **You're joking!**
 B Not at all. I'm a real pet lover.

Variations (disbelief)

- You're joking!**
You can't be serious!
It can't be true!
I don't believe it!



Mammals

- ① hedgehog
- ② squirrel
- ③ bat
- ④ wild boar
- ⑤ deer, stag, buck
- ⑥ doe
- ⑦ zebra
- ⑧ giraffe
- ⑨ rhinoceros
- ⑩ hippopotamus
- ⑪ leopard
- ⑫ cheetah
- ⑬ dromedary
- ⑭ camel
- ⑮ polar bear
- ⑯ raccoon
- ⑰ seal
- ⑱ dolphin
- ⑲ whale

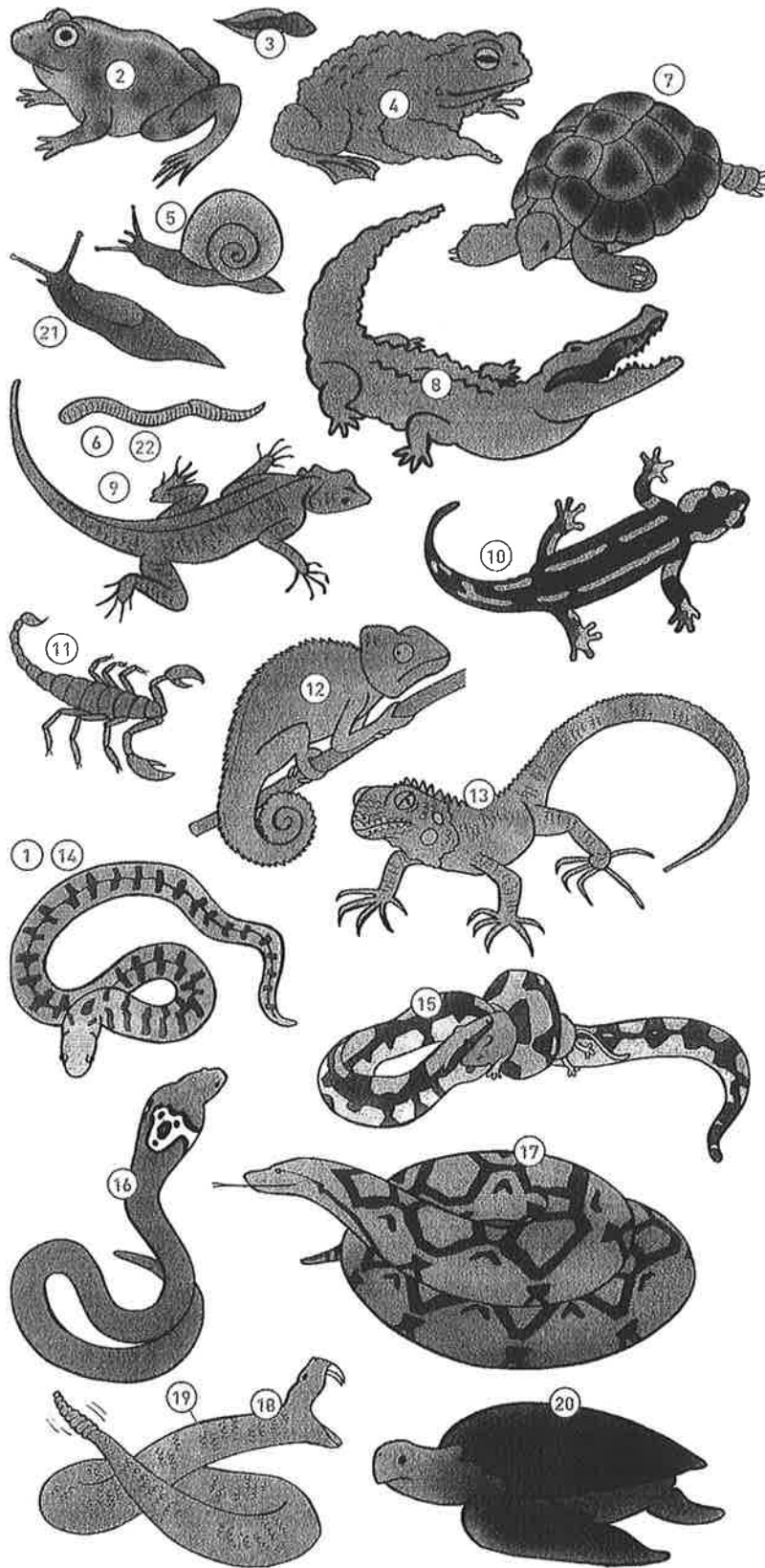
- ⑳ beaver
- ㉑ otter
- ㉒ ferret
- ㉓ ermine
- ㉔ buffalo
- ㉕ bison
- ㉖ reindeer
- ㉗ antlers (pl.)
- ㉘ antelope
- ㉙ okapi
- ㉚ panda
- ㉛ koala, koala bear
- ㉜ kangaroo
- ㉝ chimpanzee
- ㉞ gorilla
- ㉟ jaguar
- ㊱ cougar, mountain lion
- ㊲ lynx, bobcat
- ㊳ walrus
- ㊴ killer whale, orca

Words in Action

- A A safari? I can't stand the idea!
 B Why not?
 A Think of the lions, elephants ...
 B That's exactly why I go.

Variations (giving a precise reason)

- That's exactly why I go.
 That's the reason why I go.
 That's what I do it for.



Reptiles, Amphibians and Other Animals



- ① snake
- ② frog
- ③ tadpole, pollywog
- ④ toad
- ⑤ snail
- ⑥ worm



- ⑦ tortoise
- ⑧ crocodile
- ⑨ lizard
- ⑩ salamander
- ⑪ scorpion



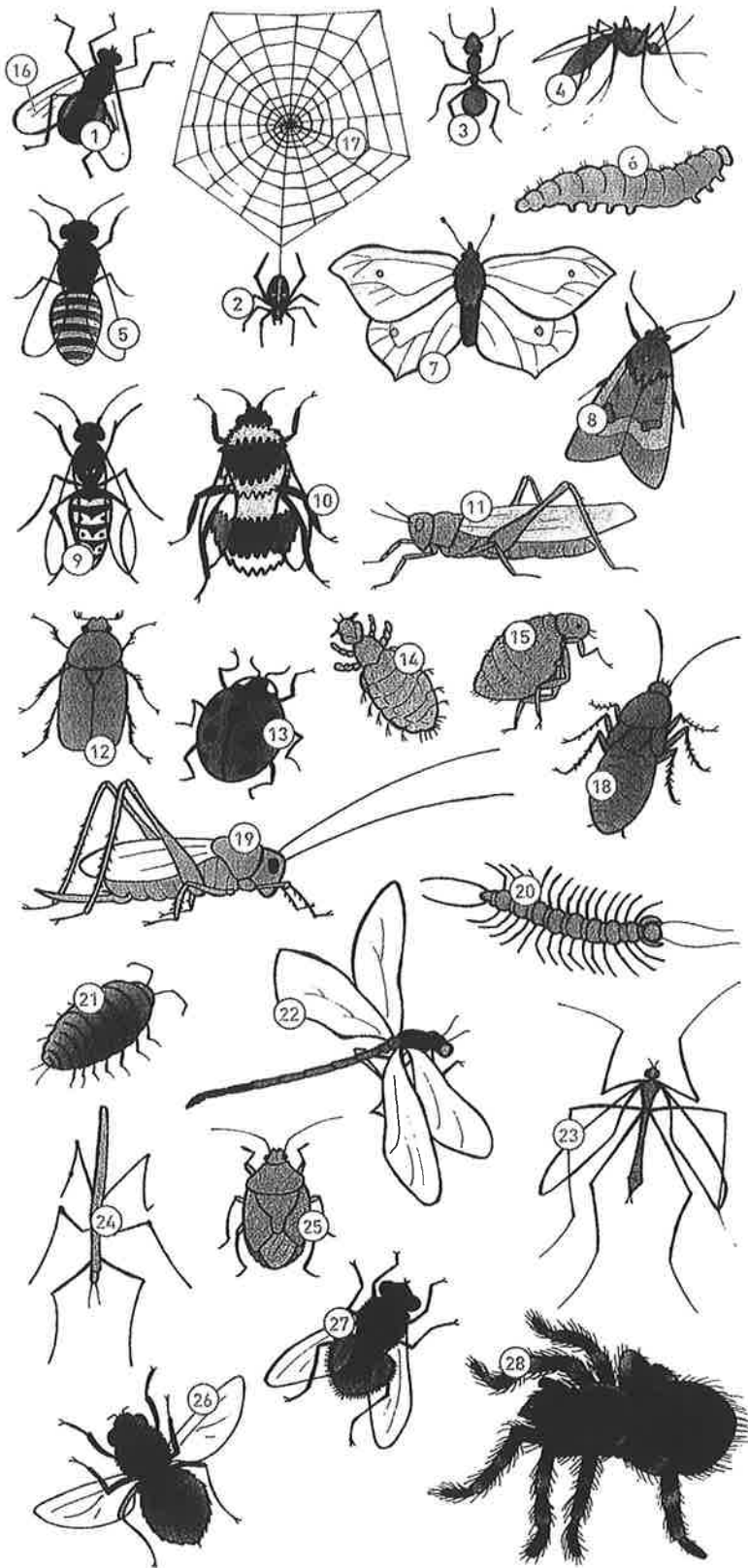
- ⑫ chameleon
- ⑬ iguana
- ⑭ viper
- ⑮ boa
- ⑯ cobra
- ⑰ python
- ⑱ rattlesnake
- ⑲ scale
- ⑳ turtle
- ㉑ slug
- ㉒ earthworm

Words in Action

- A What kind of snake is this?
 B I think it's a rattlesnake.
 A Are you sure? I think it's a cobra.
 B That 's possible too.

Variations (possibility)

- That's possible too.
 Possibly.
 Could be.
 Perhaps.
 Maybe.



Insects and Spiders



- ① fly
- ② spider
- ③ ant
- ④ mosquito
- ⑤ bee



- ⑥ caterpillar
- ⑦ butterfly
- ⑧ moth
- ⑨ yellowjacket
- ⑩ bumblebee
- ⑪ cricket
- ⑫ beetle, bug
- ⑬ ladybird
- ⑭ louse (lice)
- ⑮ flea
- ⑯ wing
- ⑰ spider web



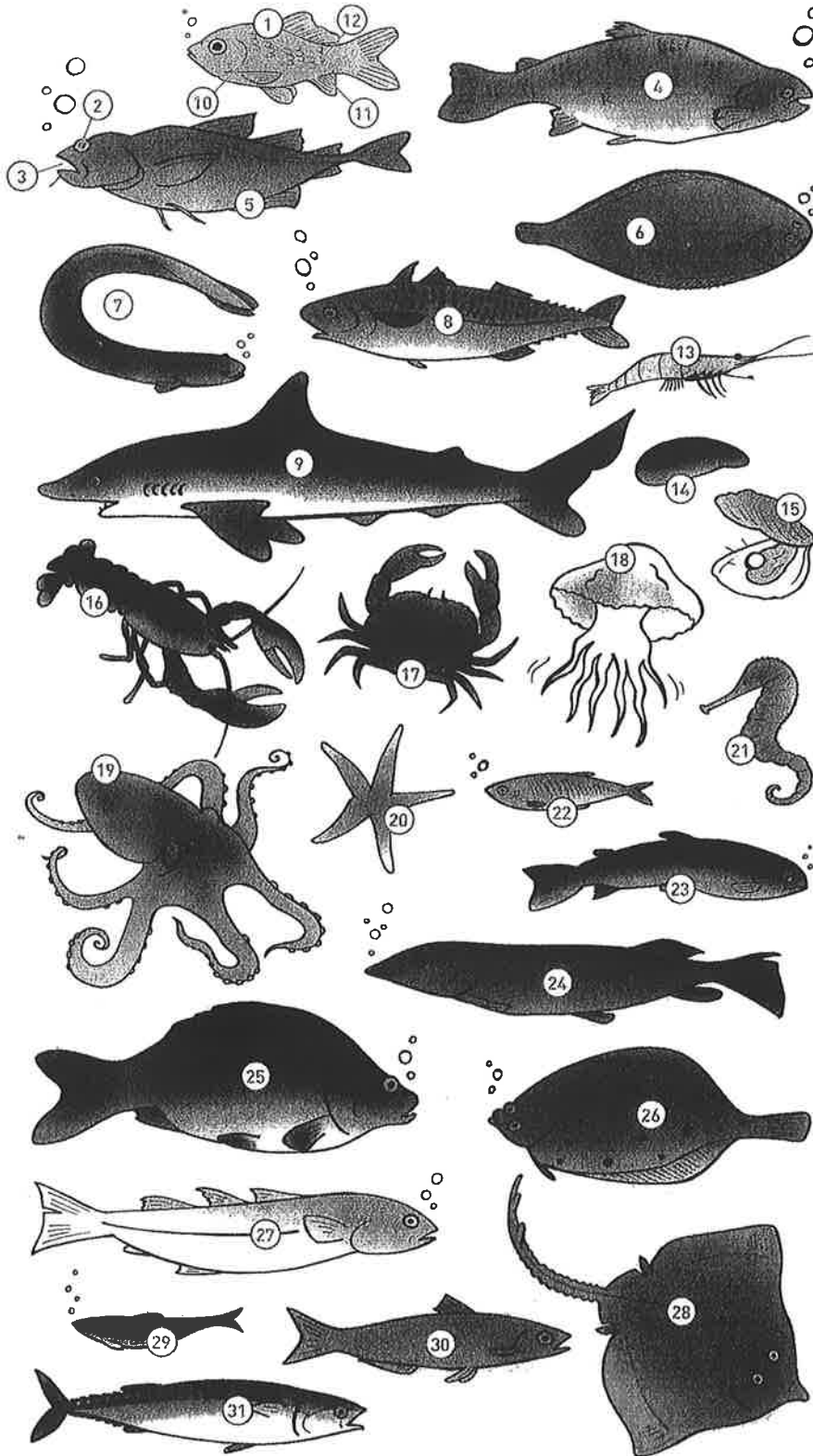
- ⑱ cockroach
- ⑲ grasshopper
- ⑳ centipede
- ㉑ woodlouse (woodlice)
- ㉒ dragonfly
- ㉓ daddy longlegs, crane fly
- ㉔ stick insect, walking stick
- ㉕ bug
- ㉖ horsefly
- ㉗ bluebottle
- ㉘ birdeater, birdeating spider

Words in Action

- A Hey, don't kill that spider.
 B Why not?
 A They're nice animals, aren't they?
 B I have my doubts.

Variations (doubts)

- I have my doubts.
 I doubt it.
 I'm not so sure.
 I wonder if that is correct.



Fish, Crustaceans/ Shellfish and Molluscs



- ① goldfish
- ② eye
- ③ mouth



- ④ salmon
- ⑤ cod
- ⑥ sole
- ⑦ eel
- ⑧ tuna
- ⑨ shark
- ⑩ gill
- ⑪ fin
- ⑫ scale
- ⑬ shrimp
- ⑭ mussel
- ⑮ oyster
- ⑯ lobster
- ⑰ crab
- ⑱ jellyfish
- ⑲ squid, cuttlefish
- ⑳ starfish
- ㉑ seahorse



- ㉒ herring
- ㉓ trout
- ㉔ pike
- ㉕ carp
- ㉖ plaice
- ㉗ haddock
- ㉘ ray
- ㉙ sardine
- ㉚ anchovy
- ㉛ mackerel

Words in Action

- A What would you like, please?
 B Have you got fresh salmon?
 A No, not today, but we've got some excellent cod.
 B Well, let me see ... I prefer eel then.

Variations (gaining time)

- Let me see ...
 Let's see ...
 Well, ...
 I don't know...



Birds



- ① hen
- ② cock, rooster 🇬🇧
- ③ chick
- ④ canary
- ⑤ head
- ⑥ eye
- ⑦ bill, beak
- ⑧ wing
- ⑨ feather, tail feather
- ⑩ foot (feet)
- ⑪ talon
- ⑫ nest



- ⑬ duck
- ⑭ goose
- ⑮ swan
- ⑯ turkey
- ⑰ peacock
- ⑱ pigeon
- ⑲ gull, seagull
- ⑳ parrot
- ㉑ sparrow
- ㉒ crow

- ㉓ magpie
- ㉔ woodpecker
- ㉕ blackbird
- ㉖ swallow
- ㉗ owl
- ㉘ eagle



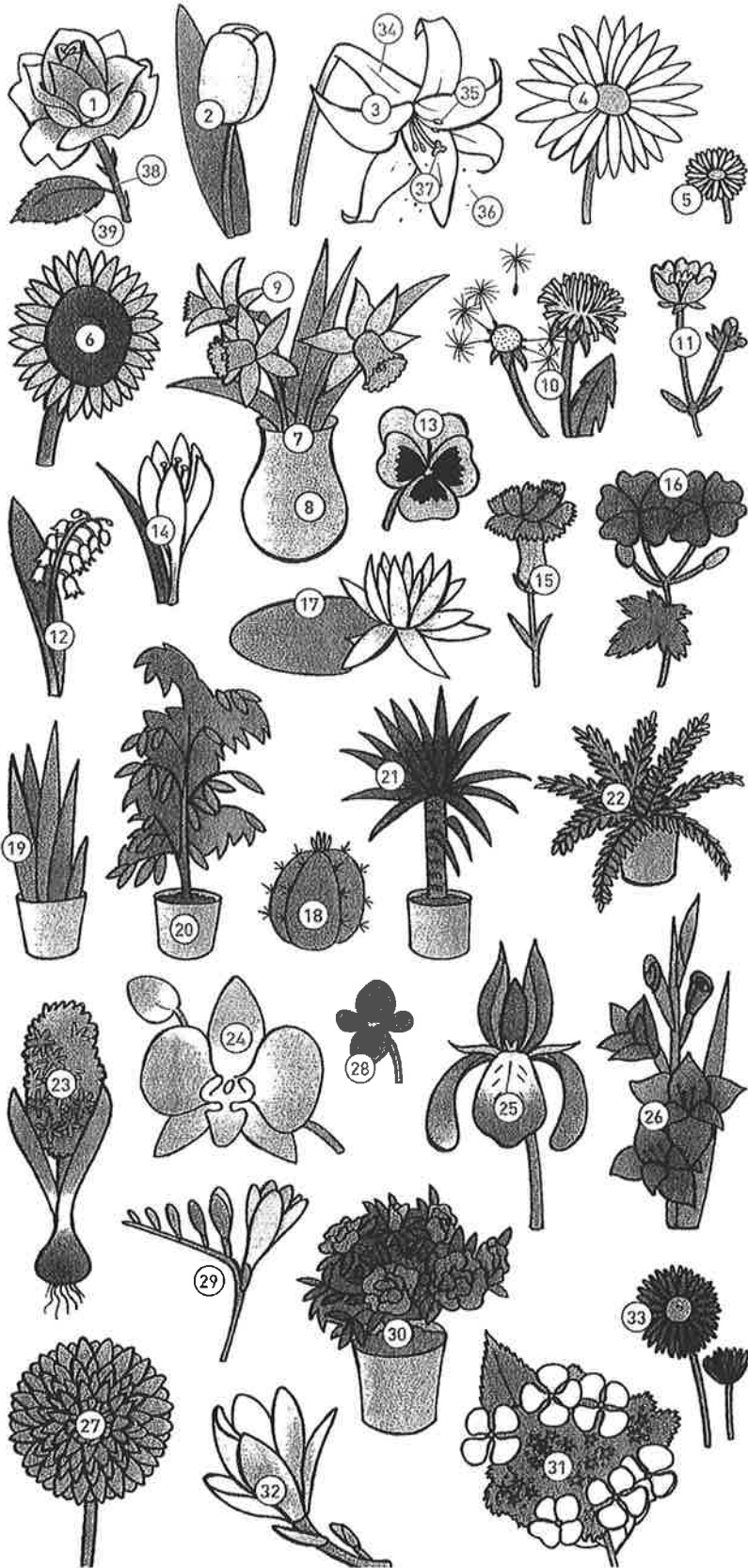
- ㉙ budgie, parakeet 🇬🇧
- ㉚ pheasant
- ㉛ finch
- ㉜ tit, chickadee 🇬🇧
- ㉝ starling
- ㉞ thrush
- ㉟ lark
- ㊱ nightingale
- ㊲ robin
- ㊳ hummingbird
- ㊴ stork
- ㊵ heron
- ㊶ hawk
- ㊷ falcon
- ㊸ buzzard
- ㊹ vulture
- ㊺ ostrich
- ㊻ penguin

Words in Action

- A What does a vulture look like?
- B It's a large and ugly bird with almost no feathers on the head, a crooked bill and large talons.
- A **Watch out!**
- B Why?
- A Well, there's one just above your head!

Variations (warning)

- Watch out!**
- Mind the step!**
- Be careful!**



- ① rose
- ② tulip
- ③ lily
- ④ marguerite; oxeye daisy
- ⑤ daisy
- ⑥ sunflower
- ⑦ bouquet, posy (small), bunch of flowers
- ⑧ vase

- ⑨ daffodil
- ⑩ dandelion
- ⑪ buttercup
- ⑫ lily of the valley
- ⑬ violet
- ⑭ crocus
- ⑮ carnation
- ⑯ geranium
- ⑰ water lily
- ⑱ cactus
- ⑲ sansevieria
- ⑳ ficus, rubber plant
- ㉑ yucca
- ㉒ fern

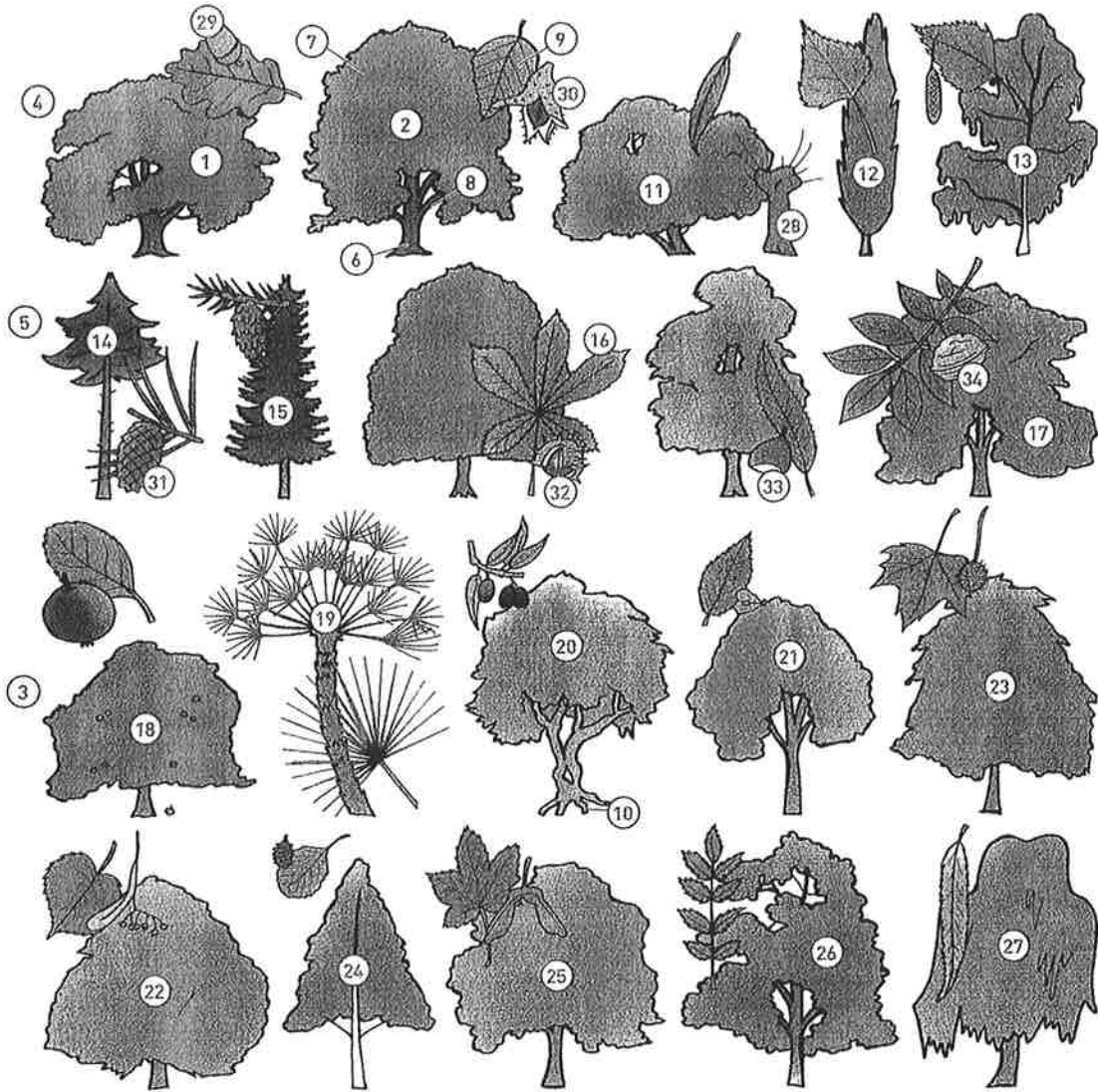
- ㉓ hyacinth
- ㉔ orchid
- ㉕ iris
- ㉖ gladiolus, sword lily
- ㉗ dahlia
- ㉘ begonia
- ㉙ freesia
- ㉚ azalea
- ㉛ hydrangea
- ㉜ magnolia
- ㉝ chrysanthemum
- ㉞ calyx
- ㉟ stamen
- ㊱ pollen
- ㊲ stigma
- ㊳ stem
- ㊴ leaf (leaves)

Words in Action

- A Aren't they beautiful hyacinths?
- B They're irises.
- A Thank you very much!
- B You're welcome.

Variations (reply to thanks)

- You're welcome.
- That's all right.
- It's been a pleasure.



- ① oak
- ② beech
- ③ fruit-tree
- ④ deciduous tree
- ⑤ conifer
- ⑥ trunk
- ⑦ crown
- ⑧ branch
- ⑨ leaf
- ⑩ root

- ⑪ willow
- ⑫ poplar
- ⑬ birch
- ⑭ pine, pine tree
- ⑮ spruce, fir
- ⑯ chestnut tree
- ⑰ walnut tree
- ⑱ apple tree
- ⑲ palm tree

- ⑳ olive, olive tree

- ㉑ elm, elm tree
- ㉒ lime, lime tree
- ㉓ plane, plane tree, sycamore 🇺🇸

- ㉔ alder
- ㉕ maple, maple tree
- ㉖ ash
- ㉗ weeping willow
- ㉘ pollard
- ㉙ acorn
- ㉚ beech-nut
- ㉛ cone
- ㉜ horse chestnut
- ㉝ chestnut
- ㉞ walnut

Words in Action

- A Is there a lot of difference between a beech and a birch?
- B Sure. Look at the leaves.
- A **I don't agree.**
- B Come on! Have a good look!

Variations (disagreeing)

- I don't agree.**
- I disagree.**
- I don't think so.**
- I don't agree with you at all.**
- I'm sorry, but I disagree entirely.**