

Level 3 Animal Management - Answers

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1. Two from temperature, pulse rate, respiration rate, capillary refill time.
2. The time it takes for blood to fill a section of the capillary system after its supply has been blocked.
3. Up to two seconds.
4. A digital thermometer has a digital display and will beep once the reading is ready. A mercury thermometer needs to be read against a scale once the mercury has stopped moving.

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1. Two from: check eyes, ears, mouth, nose.
2. The movement of the limbs when walking.
3. A layer of cells that covers certain organs and openings in the body.
4.
 - a) Normal
 - b) Low oxygen in the blood
 - c) Liver or kidney problem.

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1. To make it illegal for anyone to operate on animals, or call themselves a vet, unless they are on the register of veterinary surgeons.
2. Two from: pregnant animals may not be sold; animals may not be tied up or suspended from the ground; animals must have sufficient bedding, food, water, lighting.
3. Two from: have a normal diet; have a suitable place to live as is considered normal for that particular species; are free of pain, injury, suffering and disease; exhibit behaviour that is normal for that species.
4. Slaughterhouses / abattoirs.

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1. Single-celled organism.
2. They take over the replication processes of cells in order to duplicate their DNA.
3. A single-celled organism that that displays some animal-like characteristics, such as movement of feeding.
4. Any common bacteria, but likely to be from: E. coli, salmonella, staphylococcus.
5. Rabies – virus; Avian flu – virus; Swine Flu – virus; Bovine Spongiform Encephalopathy (BSE) – none of the options, is caused by a misfolded protein; Tuberculosis – bacteria; Bluetongue – virus; Foot and Mouth disease – virus; Newcastle Disease – virus; Equine Infectious Anaemia – virus; Ringworm -fungus; Salmonella – bacteria; Campylobacter – bacteria; Cat Scratch Fever – bacteria; Leptospirosis – bacteria; Lymes Disease – bacteria but transmitted by a tick; Psittacosis – bacteria; Cheyletiella – parasite; Sarcoptic mange – parasite; Toxoplasmosis.- a single-celled parasite.

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1. Any organism that lives in or on another organism.
2. A parasite that lives in its host.
3. See page 19 of the book.
4. Itching, irritated skin, dull coat, loss of fur.
5. Sprays, powders, tablets or shampoos can all be used, but the environment should also be thoroughly cleaned and vacuumed to remove eggs and larvae too.

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1. Any three from: direct, indirect, airborne, from vectors, from fomites, by inhalation, through ingestion.
2. Any non-living object that can contain and transmit a disease.
3. A pathogen that spreads a disease.
4. A protein produced in the blood in response to a pathogen, that can kill the pathogen.
5. A small amount of pathogen injected into an animal can stimulate the production of the correct antibodies, which the body can use in the future to fight off the disease.
6. Any organism that carries that pathogen but does not contract the disease.

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1. A notifiable disease means there is a legal requirement to report them to the Animal and Plant Health Agency. This includes any suspicion that an animal has the disease, even if you are not sure.
2. A zoonotic disease is an infectious disease that can be passed on to humans.
3. Antibiotics.
4. Two from: avoid wild areas where the ticks are found – woods, marshes, tall grasses. Clear overgrown vegetation near animal enclosures. Use tick prevention measures. Vaccinations.
5. Two from: behavioural change, aggression, sensitivity to light, fever, paralysis of the jaw, foaming at the mouth.
6. Through eating infected meat or bone meal.
7. Birds
8. A disease of the skin caused by a mite that burrows through the skin, spread through direct contact or via fomites.

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1. From CDV (6-12 weeks old, doses every 4 weeks until week 16), CPV (6-12 weeks old), CAV (6-12 weeks old).
2. From: Feline Infectious Enteritis/Feline Panleucopaenia/Feline Parvovirus; feline herpes; feline calicivirus. There is a combined vaccination for all three at 9 and 12 weeks.
3. From: Myxomatosis / Rabbit Haemorrhagic Disease (after 5 weeks); RHD 2 (7 weeks or 2 weeks later than myxomatosis/RHD).
4. From: tetanus, equine influenza, equine herpes virus, strangles, equine viral arteritis.

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1. The formation of strong bones and teeth.
2. a) Lack of sun and/or dietary sources, such as fish, grains and hay. b) Rickets (weak and curved bones), growth problems, weak legs, soft eggs laid by birds.
3. a) Taurine is an amino acid that cats cannot make and needs to be in their diet. b) Impaired vision and tooth decay.
4. a) Arachidonic acid b) Poor skin, vision problems, reproductive issues, problems with blood clotting.

5. A build-up of solids in the urinary tract. It can be treated through surgery, diet changes, medicine
6. a) An inadequate amount of insulin being produced, or the body not responding to the production of insulin. b) Frequently urinating, thirsty, hungry, weight loss, inactive, dull coat.

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1. As well as a lead and collar you could consider a muzzle and a restraint pole.
2. a) Ensure bleeding has stopped. b) Use a saline solution to disinfect. c) Make sure any debris is removed at the same time as disinfecting. d) Dry and dress the wound.
3. You must make sure that the situation is safe for you and other road users. This means making sure other cars have sufficient warning of an incident to ensure they are not putting you in danger.
4. Two from: pale gums, rapid pulse and/or breath, slow capillary refill time, coughing up blood, blood present in the faeces.
5. You would keep the animal warm, prevent any blood loss, keep airways clear, stop the animal from moving around, keep head lower than body.
6. Three from: bandages, adhesive tape, cotton wool, dressing material, rectal thermometer, tweezers, gloves, scissors, hand sanitiser, eye wash, antiseptic solution, poultice, carrier bag, blanket.
7. To preserve life, protect from further harm, reduce pain and suffering, promote recovery.
8. Two from: poisoning, severe burns, severe wounds, uncontrolled bleeding, severe allergic reaction, obstructions to the airway, severe breathing problems, weak pulse, animal is unconscious.

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1. a) Monosaccharides, disaccharides and polysaccharides. b) They are an important source of energy for animals.
2. a) Amino acids. b) They play some role in all bodily processes and functions.
3. A source of energy, absorption of vitamins A, D, E, K.
4. Two from: provides a medium in which chemical reactions can take place, delivers nutrients to the body's cells, is used to flush toxins away from the body, regulates body temperature.

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1. Protein.
2. In the liver and muscles.
3. Fat-soluble vitamins - A, D, E and K.
4. Fat.
5. Within the structure of the body, for instance in the bones.

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1. a) mechanical breakdown of food through chewing, chemical breakdown through saliva, b) to move food from the mouth to the stomach, c) where most digestion takes place: releases gastric acid to expose chemical bonds of protein, and enzymes to break proteins into amino acids and fats into their simplest form; also mechanical action to churn up the food d) some further enzymes are released for final breakdown of food, and nutrients are absorbed into the bloodstream e) any remaining nutrients and water are absorbed.
2. a) mechanical breakdown of food through chewing – but there is no chemical breakdown, b) the rumen is a container where plant material sits until it has been broken down by enzymes produced by symbiotic microbes, c) water from food is absorbed and any remaining particles of food are filtered out, d) much the same a monogastric stomach - hydrochloric acid and a range of enzymes are secreted that allows fat, protein and carbohydrates to be extracted.
3. Some protein can be digested by the microbes in the rumen, and the rest can be digested in the abomasum.
4. Monogastric animals that can break down cellulose by relying on bacteria that live in the large intestine to produce the necessary enzyme. One from rabbit, horses, rodents.
5. Two from: sheep, goats, cows.
6. a) Generate mucous and absorb nutrients, b) it secretes a substance called serous that helps reduce friction from the muscle movement.

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1. Two from: fruit, vegetables, grasses, meat.
2. a) High. b) Low. c) High for red meat and pork, low for poultry.
3. Dry food: convenient to store, better for animals' teeth, less water content, more carbohydrates. Wet food: easy to store but will spoil once can is opened, more expensive,

fewer carbohydrates, more protein and fat so more palatable for animals, greater water content.

4. Cat.
5. Two from: age, activity levels, pregnant/new mother, weight.

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1. Carbohydrate has not been listed. Adding up the listed constituents give us 56.6%, which means that carbohydrate accounts for $100 - 56.6 = 43.4\%$.

Now we calculate the energy for each component for a 100g serving:

25% protein = 25g of protein in a 100g serving. There are 3.5kcal per gram of energy in protein, so: $25 \times 3.5 = 87.5\text{kcal}$.

11% fat = 11g of fat. 8.5kcal per gram of energy in fat, so: $11 \times 8.5 = 93.5 \text{ kcal}$.

43.4% carbohydrate = 43.4g of carbohydrate. 3.5kcal per gram of energy in carbohydrate, so: $43.4 \times 3.5 = 151.9 \text{ kcal}$.

All other components do not provide any energy. Total energy = $87.5+93.5+151.9 = \mathbf{332.9 \text{ calories}}$

2. Dry food: there is 9% moisture which means the remaining 91% accounts for all nutritional content. We need to calculate the percentage of dry food protein and fat in relation to this 91%.

$$\text{Protein: } 25\% / 91\% = \mathbf{27\%}$$

$$\text{Fat: } 17\% / 91\% = \mathbf{19\%}$$

Wet food: there is 73% moisture, which means the remaining 27% accounts for all nutritional content. We need to calculate the percentage of wet food protein and fat in relation to this 27%.

$$\text{Protein: } 10\% / 27\% = \mathbf{37\%}$$

$$\text{Fat: } 7\% / 27\% = \mathbf{26\%}$$

The wet food has more protein and fat than the dry food.

3. GE - the total energy present in food. DE - the energy in food that can be extracted through digestion. ME - the percentage of DE that can be used for an animal's daily energy needs.
4. BMR - the amount of energy needed to run the body's basic functions, such as breathing. RER - the amount of energy needed an animal needs when it is resting.
5. $\text{RER} = (12 \times 30)+70 = 360 + 70 = \mathbf{430 \text{ Calories}}$.
6. $\text{Ration} = 430 / 333 = \mathbf{1.3\text{kg}}$

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1. a) Less, b) More, c) More, d) More, e) Less

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1. Three from: delivery of fresh water, foodstuff, quantities, frequencies, methods of food delivery, alternatives to the plan dependent on food availability.
2. Consumption of food and water, health status, behaviour, frequency and turbidity of urination, frequency and consistency of defecation.
3. Have there been any positive or negative impacts of the plan? Were the aims of the plan, with regard to health, were they met? Were there any unintended consequences of the plan with regard to the animal's health?

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1. Two from: pacing, rocking, tossing the head, moving a limb back and forth, repeated biting or tongue movements.
2. One from: scratching, self-grooming, touching themselves.
3. Two from: chasing own tail, spinning around and around, constant movement, short attention span, impulsive, easily distracted, destructive behaviour.
4. Any from: prolonged periods of sitting, standing or lying down, lack of response to stimuli, withdrawn body language, less vocal than normal.
5. Through leaving urine, leaving other scents by rubbing against objects, bite or scratch marks, vocalisation such as barking or howling.
6. Two from: way to keep clean, helps build social bonds, reduction of stress levels.
7. Dawn and dusk.
8. In oestrus.

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1. Because their ancestors in the wild would establish a larger territory with a natural urge to roam.
2. Any from: clean, dry, correct temperature for species, access to food and water, access to a toilet area, opportunity for exercise, play and intellectual stimulation.

3. Two from: sociable animals being kept alone, solitary animals being kept in groups, incorrect social structures within social groups, introduction of new animals that upset the established hierarchies, incompatible breeds living together, incompatible species (e.g. predator-prey) living together or in close proximity, removal of family members, competing animals during mating

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1. Two from: wolves do not make strong social bonds with humans (not socialised), wolves live in a family unit with a breeding pair (formation of pack in wild), wolf pups will begin to explore earlier than dog pups (wolves need to learn to look after themselves more quickly), wolves are wary of novel situations and people/animals (because they are not used to social situations like dogs), wolves do not look at humans for visual cues (having not spent thousands of years with humans), wolves regurgitate food for pups, wolves rarely bark but do howl (howling helpful for territorial communication).
2. Any from: wild wolves more aggressive with humans, captive wolves less likely to explore due to confinement, no alpha wolf in the wild as they live in family packs whereas an alpha wolf may occur in captivity due to unnatural (not family) social grouping.
3. Two from: both have a core area to their territory, both use scents and markings to communicate but not facial expressions, prefer to run to safety rather than fight if in danger, private and hygienic in their toileting habits, prefers to drink running water, likes an elevated sleeping place.

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1. a) Over a very long period of time, evolution ensures that an animal species becomes adapted to the environment in which they live, because the traits that are best adapted to that environment eventually become widespread amongst the species. b) When resources are scarce, inevitably inter- and intraspecies competition affects the way that animals behave towards each other. This may be increased aggression, changes in territory, or being forced to move.
2. The passing on of traits from parents to children.
3. Evolution is a process whereby heritable characteristics change over many generations. Development consists of the changes that an animal undergoes during its lifetime. Evolution affects how an animal can develop. But whilst evolution ensures traits are very similar across a species, development can be quite different for each individual, depending on their environment and experiences.
4. Darwin's theory states: animals within a species display a range of different heritable characteristics; there is competition for resources which means that some animals in a

species will not survive long enough to reproduce; animals with characteristics that are better suited to their environment are more likely to survive and pass them on to offspring; those successful characteristics are therefore passed on to the next generation, whilst less successful characteristics, that led to animals dying, are less likely to be passed on.

5. A commonly accepted theory is that less aggressive wolves approached humans because the humans provided a source of food. With limited food resources, these friendlier wolves would have gained an advantage over other wolves and this less aggressive trait passed on. Similarly, the wolves who were better able to predict human behaviour would likely benefit more and that trait passed on, so that the ability to read human's facial expressions was developed. In this way, dogs began to be a distinct genetic species from wolves.

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1. Newborn animals suckling for milk, moths flying towards a light source, all reflexes.
2. When an animal attempts different solutions to a problem or scenario. They will learn to avoid repeating behaviour that causes discomfort and repeat behaviour that rewards them in some way, for instance with food.
3. Songbirds will learn elements of their song by listening to others first.
4. For example: learning to kill prey is a skill that needs to be acquired and whilst animals such as big cats have evolved the tools for killing (teeth, claws, speed and strength) they are often taught how to use these tools by parents. They might copy their parents during the hunt, or be given semi-dead prey to practice with.
5. When a group of animals learn the same skill from each other, but that is distinct from other groups from the same species. E.g. wild rats in Israel learning to strip pine cones, birds in the UK learning to peck open milk bottle lids.

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1. Hormones are chemical messages that are sent around the body to control and regulate bodily functions.
2. Whilst hormones control bodily processes, evolution has ensured that they also influence behaviour related to that process. E.g. testosterone and oestrogen are sex hormones but influence mating behaviour.
3. Fixed action patterns are behaviours that are hard-wired into animals. They require an external stimulus, but once begun the behaviour tends to continue on through a sequence of 'action patterns' regardless of further stimulus. E.g. mating rituals.

4. Another animal might induce behaviours related to: sexual attraction, competition (for food, shelter or mates), fear (e.g. prey), or aggression (e.g. predator).
5. Availability of food, hours of daylight, temperature, weather.

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1. Relates to animals of the same species.
2. Facial expressions, e.g. dogs baring teeth demonstrate aggression. Body language, e.g. cat showing you its belly means it feels comfortable and trusts you.
3. Pheromones are chemicals an animal emits that other animals can sense through their olfactory system. They can communicate the limits of an animal's territory, their availability to mate.
4. Growling, hissing, roaring.
5. It's when animals groom each other. It helps to build and reinforce social structures.

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1. a) the top animal in the group is dominant over all other animals in the group, the second animal in the group dominant over all others except the top animal, and so on.
b) Anything that is not a linear hierarchy, E.g. an animal 'C' may be submissive to animal 'B' and dominant over 'D'; but 'D' is dominant over 'B'.
2. Wide range of examples, including: growling or other 'warning' vocalisations, staring at the submissive animal until it looks away, assertive body language etc.
3. Any behaviour associated with conflict between two or more animals. Threat, avoidance and aggression.
4. It allows animal to explore their role in the social group with violence as a very last resort. This benefits all parties because if animals resorted to violence straight away then there would be a great deal of unnecessary injuries and deaths.
5. Any behaviour that is associated with conflict between two or more. Examples include allogrooming, play and any other non-aggressive touching.
6. Altruism is when an animal's action reduces its own likelihood of reproductive success whilst increasing the likelihood of another.

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1. This is when an animal (male or female) has more than one mate of the opposite sex, but those mates are exclusive within some social group.
2. This is when one animal mates exclusively with one other animal.
3. When an animal mates indiscriminately with any other animal.
4. Dances, displays, collecting objects, calling and vocalisations, demonstrations of strength.
5. Biparental – more advantageous for both parents to be present i.e. because if one were absent there would be a greater risk of mortality for the young, which would disadvantage the parent because their genetic material would not be passed on. Intensive – more advantageous for one parent to leave to find other mates. From a genetic point of view this is more efficient if one parent can successfully care for the young.
6. Because the chances of survival of a good number of the young are high even with out the parent present. The parents can therefore spend more time pursuing further reproductive success. This tends to be the case for reptiles and fish.
7. A parental bond is an evolutionary development that ensures that young animals that need looking after have their parents present to so.
8. Filial imprinting is when a newborn animal has a hard-wired instinct to make a connection to its parent (usually its mother). This might mean the newborn is hard-wired to assume the first moving object it sees is its parent. Sexual imprinting is when a young animal learns what an appropriate sexual mate should be, i.e. of the correct species.