KS3 Maths at Marwell
Gestation times challenge

Gestation times challenge

This activity involves the use of scatter graphs and statistical investigation skills.

The students will use the database provided to investigate the correlations between gestation time and age of sexual maturity, number of young produced, and lifespan in a sample of species kept at Marwell Zoo (past and present).

This is intended as a problem solving activity, although more structure can be provided if students are new to the techniques or purpose of scatter graphs.

Students will need to make a number of decisions which can either be discussed or prompted with the whole group, or within small groups, depending on the ability and confidence of students and on the time available for the activity.

The TASC wheel (Thinking Actively in a Social Context) can be used as a framework to help structure their enquiry.

1. Ensure that students understand the terms used in the challenge

2. Work through stages 1-4 of the TASC wheel provided to help them decide how they are going to investigate the problem *(drawing scatter graphs is recommended)*

3. Encourage them to consider sample size and their method of choosing the sample - random or biased?

4. Choose a scale for the graphs, ensuring that the units are consistent. The students will need to decide what to do about non-specific entries in the animal database.
Eg. The Amur tiger reaches maturity at "3-5 years" of age *(so they could take an average)*

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Curriculum Links

MATHEMATICS
Statistics
• Describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs.

Gestation times challenge!

The gestation time of a mammal is how long it is pregnant for. It can range from just 12-13 days in Virginia opossums, to nearly 2 years in African elephants!

Your challenge is to decide which of the following variables gives you the best indication of what a mammal's gestation time will be:

- ❖ Number of young produced

- ❖ Lifespan

- ❖ Age of sexual maturity

Use the information in the Marwell animal database to justify your answer.

Animal database

Animal species	Gestation/ incubation time	Age of sexual maturity	Number of young produced per pregnancy	Lifespan
Amur leopard	100 days	3 years	2 or 3	23 years
Amur tiger	105 days	3 - 5 years	2 or 3	26 years
Black and white ruffed lemur	90 -102 days	20 months female, 608 days male	2 to 6	19 years
Bongo	250 days	20 months	1	19 years
Capybara	150 days	15 months	5	8 -10 years
Cheetah	90 - 95 days	2 years	3 or 4	19 years
Collared peccary	145 days	12 months	2	24 years
Crested porcupine	112 days	8 -18 months	2	15 years
Dama gazelle	156-224 days	12 months	1	18 years
Forest buffalo	340 days	3.5 - 5 years	1	26 years
Giraffe	489 days	4 years	1	20 years
Grey kangaroo	30 days	20-36 months female, 20-72 months male	1	20 years
Hartmann's mountain zebra	365 days	3 - 6 years	1	29 years
Meerkat	77 days	1 year	2 to 5	13 years
Linne's two-toed sloth	320-350 days	3 - 4 years	1	27 years
Ocelot	70 days	18 - 22 months	3	21 years
Okapi	425 - 491 days	2 years	1	33 years
Ostrich	42 days	3 - 4 years	up to 11	30 - 40 years
Pygmy hippo	184 - 204 days	4 - 5 years	1	40 years
Ring-tailed lemur	138 days	2 - 3 years	2	33 years
Roan antelope	280 days	2 years	1	17 years
Sable antelope	268 - 280 days	2 years	1	22 years
Scimitar-horned oryx	225 - 253 days	11 months	1	20 years
Serval	74 days	1 year	1 to 4	19 years
Siamang gibbon	230 days	8 years	1	40 years
Killer whale	15-18 months	10-15 years	1	50-60 years
Sitatunga	240 - 250 days	2 - 3 years	1	19 years
hedgehog	31-35 days	9-12 months	4-7	6-8 years
Warthog	175 days	18 - 20 months	1 to 8	18 years
White rhinoceros	16 months	females 6 years, males 10 - 12 years	1	50 years

Marwell Wildlife

TASC (Thinking Actively in a Social Context) Wheel

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7

START HERE!

1

What do I know about this?

What have I learned?

Let's tell someone!

What is the task?

GESTATION TIMES

2

How well did I do?

How many ideas can I think of?

6

Let's do it!

Which is the best idea?

3

5

4