



100 000 000 AND OTHER *REALLY* BIG NUMBERS

INTRODUCTION

The fossils displayed at Kronosaurus Korner Marine Fossil Museum all come from the Richmond area, Far North Queensland. They are from the Late Cretaceous period and all are about 100 000 000 years old. Unlike palaeontologists, most people aren't used to working with large numbers such as this one. The 2020 Kronosaurus Korner School Challenge gives you a chance to work with large numbers. This year's Challenge comes in the form of 10 questions. They all have large numeric answers. Each of the ten questions doesn't ask you for a number. It asks you to identify the Zone into which each of these numbers will fall. There are 5 Zones.

Zone 1: "your answer is less than 10 million"

Zone 2: "your answer is between 10 and 50 million"

Zone 3: "your answer is between 50 and 150 million"

Zone 4: "your answer is between 150 and 500 million"

Zone 5: "your answer is over 500 million"

2020 KRONOSAURUS KORNER SCHOOL CHALLENGE

Identify the Zone into which the numbers described below will fall. Justify your answers in a report addressed to the Challenge judges at Kronosaurus Korner.



The current human population of Australia



The area of Queensland (in hectares)



The cost of an Airbus 380 passenger jet (in \$AUD)



The mass of the Sydney Harbour Bridge (in Kg)



The area of an Olympic swimming pool (in cm²)



The number of cells after one day (begin with one cell which divides into 2 cells after 1 hour. These two cells each divide into two more cells after another hour. This cell division pattern repeats every hour thereafter.)



The ant population of Australia



The value of 1 Tonne of \$20 Australian notes (in \$AUD)



The mass of food the average Australian will eat in their lifetime (in Kg)



The total number of steps the average Australian will take in their lifetime

2020 KRONOSAURUS KORNER SCHOOL CHALLENGE

How Did We Do? (TEAM SELF-ASSESSMENT FORM)

SCHOOL _____

Team (circle one) Gr 5-6 Gr 7 Gr 8-9

TEAM MEMBERS (print)

Our Team's Score

1. We made good plans for handling each of the 10 tasks. ___ / 10
 2. We made good use of resources such as the internet to find information and evidence to successfully complete each task. ___ / 30
 3. We double-checked our estimates and calculations for reasonableness and accuracy (especially in questions 6 to 10) . ___ / 10
 4. We provided lots of evidence and reasons to support our conclusions in all 10 tasks ___ / 30
 5. We checked our draft report for spelling, grammar, accuracy, completeness and attractiveness. ___ / 10
 6. Each team member contributed to the team effort. ___ / 5
 7. Our team enjoyed this year's Challenge. ___ / 5
- TOTAL ___ / 100

2020 KRONOSAURUS KORNER SCHOOL CHALLENGE

TEACHER ASSESSMENT FORM

SCHOOL: _____ TEACHER: _____

ADDRESS: _____

CONTACT: Tel _____ e-mail _____

TEAM LEVEL (circle one) Gr 5-6 Gr 7 Gr 8-9

TEAM MEMBERS (print) 1 _____

2 _____ 3 _____

4 _____ 5 _____

Start Date _____ Completion Date _____

1. Team came up with a good plan of attack. __ / 8
 2. Team members displayed effective research skills. __ / 8
 3. Team made reasonable estimates and assumptions. __ / 8
 4. Team was self-directed throughout the Challenge. __ / 8
 5. All members of this team made positive contributions. __ / 8
 6. Team members demonstrated good interpersonal skills. __ / 8
 7. Team demonstrated Creativity. __ / 8
 8. Team demonstrated good problem solving abilities. __ / 8
 9. Team edited and refined their draft report. __ / 8
 10. Team members demonstrated good communication skills. __ / 8
 11. Team report is complete. __ / 8
 12. This team enjoyed the Challenge. __ / 12
- TOTAL __ / 100

2020 KRONOSAURUS KORNER SCHOOL CHALLENGE

JUDGE'S ASSESSMENT FORM

1. All 10 Tasks well-researched. ___ / 40
 2. Reasonable assumptions and estimates used. ___ / 20
 3. Mathematically correct. ___ / 20
 4. Convincing, well-reasoned conclusions. ___ / 40
 5. Report well-organized and communicated. ___ / 40
 6. Complete and comprehensive report. ___ / 20
 7. Submission was interesting and entertaining. ___ / 20
- TOTAL ___ / 200

2020 KRONOSAURUS KORNER SCHOOL CHALLENGE

IMPORTANT CONTACT TEACHER INFORMATION

THE 2020 CHALLENGE

Thank you for taking an interest in this year's Challenge. We hope you and your students will find the Challenge a unique and valuable learning experience. It is designed to be challenging, different and most of all, fun.

This year's Challenge is made up 10 tasks. They range in complexity and difficulty from simple to quite challenging. The tasks are designed to appeal to a range of students. A wide range of outcomes are possible and anticipated. That is why the same challenge is to be presented to:

- Junior Teams (Gr 5-6)
- Intermediate Teams (Gr 7)
- Senior Teams (Gr 8-9)

GETTING STARTED

You may start the Challenge whenever you wish.

Teams must submit their work to you no more than one month after starting the Challenge.

HOW TEAMS OPERATE

To maximize interaction, a team can have no fewer than 3 members and no more than 5 members.

It is expected that a team will work collaboratively on all 10 tasks in the Challenge and produce a single (team) submission for each task. It is expected that team members will decide how they will organize themselves to work on the tasks and produce their joint submission for each task. You, or another teacher or other teachers, can facilitate this.

It is left to you and your students to decide how each team operates. You may wish to run several meetings at lunch times, or after school like a club. Team members may wish to take on specific tasks as home assignments. Team members should feel free to carry out any research they deem necessary. Students should feel free to seek feedback on their ideas from non-team members. It is important however, that a team's submission be created by team members only, using strategies, results and formats agreed to by the team.

ASSESSMENT

School submissions will be assessed by team members themselves, by you the teacher and thirdly by Challenge judges at Kronosaurus Korner.

It is important that team members be made aware of how their work will be other-assessed and self-assessed **BEFORE** they start the Challenge. This knowledge should help them shape how they work and make their efforts more productive.

That is why each team should be given copies of the three supplied assessment rubrics along with the 2020 Challenge tasks. Notice that a team will submit a mark out of 100, the teacher a mark out of 100 and the judges at 'KK' a mark of 200.

SUBMISSIONS

You are responsible for e-mailing your team(s) submissions and the completed assessment sheets to

manager@kronosauruskorner.com.au

Mail them at a time that is convenient to you,

but no later than October 23, 2020.

Remember, submit the work of one team only for each level participating in the Challenge.

FEEDBACK

Museum officials will e-mail your team(s) results, along with some feedback for your team members.

We encourage you to give us feedback on how the Challenge worked in your school along with suggestions for improving future Challenges.

Any questions? Contact

manager@kronosauruskorner.com.au

Enjoy the Challenge!