Instructions

QAMT Rockhampton is delighted to make these questions available to you!

You should have received the following :
* Instructions with Score Sheet
* Individual Questions
* Individual Questions Answers
* Relay Questions
* Relay Questions Answers
* Team Questions
* Team Questions Answers Sheet
* Team Questions Answers
* Shoot Out Questions
* Student Participation Certificate
* Teacher PD Certificate

AIMS
The students will:
- advance their interest in creative problem solving
- acquire problem solving skills and processes
- develop teamwork skills
- be highly involved in a session of intellectual fun in a scholarly atmosphere.

FORMAT
The competition consists of five events:

Individual Event	Each student has 3 minutes to individually complete a set of questions without a calculator. This focuses on using mental maths quickly.
Relay Event	Students work in pairs and rotate around as they solve questions. There are 25 questions to be answered in 30 minutes.
Team Event	Each team has 30 minutes to work together and answer 10 questions.
Estimation Event	During the Teams Event, students will be asked an estimation question. Each team has time to confer and furnish their best guess.
Shoot Out Event	Students will compete individually responding to questions read aloud until only one student from each year level remains. This focuses on listening carefully to the question being asked and using mental maths quickly.

TEAMS

A team consists of 5 students in the appropriate year levels. This can be a team where all 5 students are the same year level or mixed teams of different year levels.

MATERIALS

Each student MUST bring:

- a calculator of any type
- pens, pencils, eraser, ruler

SUPERVISORS

One adult or senior student MUST accompany EACH team. They will assist as a Supervisor in all events. This need not be a teacher nor needs any mathematical knowledge but must be Year 10 or older and needs to be able to follow simple instructions given to them. If a team does not have a supervisor, it will be difficult for them to participate.

STUDENT PARTICIPATION CERTIFICATE

Print one per student.

TEACHER PD CERTIFICATE

Print one per teacher involved in organising, hosting, or supervising the challenge.

Every effort has been made to ensure the questions and answers are correct. Adjust as necessary should you find an error.

Individual Event

HOST MATERIALS

* Individual Questions
  - Five pages, single sided page of 20 questions per student.
  - Each student should have different questions.
  - *Copy one set of five per team.*
* Individual Questions Answers
  - One page, double sided.
  - *Copy one per team supervisor. These should not be shown to students.*

STUDENT MATERIALS

* Students should have a pencil or pen.
* No calculators allowed.

PROCEDURE

- Students have 3 minutes to answer as many questions as possible.
- Students work individually. They should not consult or help each other.
- Units are not required.
- Give each student one page face down.
- As the timer is started, students flip over the page and begin work.
- Students stop work after 3 minutes.
- Supervisor collects the five sheets from the team.

Keep them together. Individual sheets do not have space for identification.

- Supervisor should write the Year, School, and Team Number on the Individual Questions Answers sheet.
- Supervisor marks each sheet submitted by students.

SCORING

* Each question is worth one mark. Award full marks even if units are not included.
* Each student can earn a maximum of 20 marks.
* The team can collectively earn a maximum of 100 marks for this event.

Relay Event

HOST MATERIALS

* Relay Questions
  - 25 pages, one question per single sided page
  - *Copy one set per team, single sided and stapled.*
* Relay Questions Answers
  - One page, single sided.
  - *Copy one per team supervisor. These should not be show to students.*

STUDENT MATERIALS

* Students should have a pencil or pen.
* Calculators are allowed.
* Spare scribble paper may be used, although each question page should have enough space for working out.

PROCEDURE

- Students have 30 minutes to complete as many questions as possible.
- Students work in pairs with a pivot on the end and rotate, as per the instructions on the next page.
- Units are required when applicable.
- Supervisor should write the Year, School, and Team Number on the Relay Questions Answers sheet.
- Supervisor keeps score, as per the instructions on the next page.
- Question is incorrect if units are not included.

SCORING

* Each question is worth a maximum of 8 points.
* The team can collectively earn a maximum of 200 points for this event.

Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020

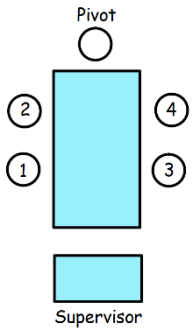
Supervisor's Instructions - RELAY Event

Equipment
1 set of Relay Questions – questions 1 to 25 arranged in the correct order
1 Relay Answer / Score Sheet *(Please ensure that this sheet CANNOT be seen by students AT ANY TIME)*

Identification of Teams
On the Answer Sheet:
CIRCLE the appropriate YEAR LEVEL
WRITE the SCHOOL NAME and TEAM NUMBER

Procedure
Team splits into two pairs and a "Pivot".

One pair should be seated on the left side of the table (positions 1 and 2) and one pair should be seated on the right side of the table (positions 3 and 4). The fifth student should be standing at the end of the table in the "Pivot" position.



⇒ The supervisor hands Q1 to players in Positions 1 & 2, and Q2 to players in Positions 3 & 4. The players in each pair work collaboratively. Input from the other pair or the Pivot is **NOT** permitted.

⇒ Players write their answers on the question sheet and hand it to the supervisor for marking. The marker records the answer as correct or incorrect in the appropriate column on the Relay Event Score Sheet.

⇒ Each time the pair of players in Positions 1 & 2 completes a question by getting it correct, or has 3 incorrect answers, or passes, the player in the Pivot Position moves to Position 2 and that player moves to Position 1. The player in Position 1 moves to the Pivot Position.

⇒ Similarly, each time the pair of players in Positions 3 & 4 complete a question by getting it correct, or has 3 incorrect answers, or passes, the player in the Pivot Position moves to Position 4 and that player moves to Position 3. The player in Position 3 moves to the Pivot Position.

⇒ Each time a question is answered correctly, or has been answered incorrectly 3 times, or has been passed by a pair, and the players have rotated, the supervisor hands the next question to the new pair.

This process continues until either (a) time has run out or (b) all questions have been attempted.

When the instruction to BEGIN is given, the pair of students on the left is given Question 1 and the pair of students on the right is given Question 2.

The Pivot cannot give any assistance to either pair working on a question, and the pairs cannot assist each other or exchange questions.

PASSED QUESTIONS MAY NOT BE ATTEMPTED LATER.

Time Allowed
The relay event will run for about 45 minutes. Students have approximately 30 or 40 minutes to complete as many of the 25 questions available.

If the team has answered all questions before time has expired, the event continues for all other teams. That is, the event is not simply a 'race'. Encourage students to further review the questions, but they cannot score any more points.

Scoring
For each Relay question circle the score box on the ANSWER SHEET as follows:

If the answer provided on the FIRST attempt is CORRECT
8 points

If the answer provided on the SECOND attempt is CORRECT
6 points

If the answer provided on the THIRD attempt is CORRECT
4 points

If the answer provided on the THIRD attempt is INCORRECT
OR
If the team chooses to PASS on a question at any time
0 points

When an answer is presented for marking, you may only state CORRECT or INCORRECT and the number of the attempt. No hints or guidance may be given to the students, even if it is a second or third attempt.

When time is called, if a team has already passed an answer to you, it will be accepted and marked as usual.

You and the team captain will total the number of points for that team and record that result on the bottom of the score sheet.

The score sheet will be collected from you.

Disputes / Confusion
If at any time during the event you have a procedural concern, or you are unsure whether an answer you have received is correct or not, raise your hand to request assistance. A judge will assist you immediately.

Estimation Event

* Runs concurrently with the Team event.

HOST MATERIALS
** Host school will need to find something students can estimate which has a known answer.*

Some ideas are included, but anything similar that host schools have would be fantastic too.
- Fill a jar with lollies/jelly beans/skittles/m&m's/etc.

Students estimate the number of lollies inside the jar.
- Fill a translucent box with marbles or dice.

Students estimate the number of items inside the box.
- Fill a jar with coloured sand.

Students estimate the percentage or proportion of sand in the jar which is a particular colour.
- Print a picture of a pepperoni pizza with lots of pepperoni on it.

Students estimate how many slices of pepperoni are on the pizza by looking at the picture.
- Fill a container with liquid.

Students estimate the number of millilitres of liquid in the jar.

STUDENT MATERIALS
* see the Team Event

PROCEDURES
- As students are working on the Team Questions, bring this around to each team.
- Give them time to view the item and agree on an answer.

-- Each team writes their agreed answer in the Estimation Event Response blank at the bottom of the Team Questions Answer Sheet.

The time each team has to form their guess should be short enough to encourage estimation rather than actually counting and so that every team will have a chance to do so before the Team Event finishes. This can change dependent on the number of teams present and the nature of the estimation being done.

SCORING
* The team with the closest guess to the known answer is declared the winner.
* No points are awarded for this event. It may be used as an overall tie breaker later or just something fun to do. If host schools do not have something for this event, then leave this part of the Team Questions Answer Sheet blank.

Team Event

HOST MATERIALS

* Team Questions
  - One page, double sided. 10 questions.
  - *Copy one per student.*
* Team Questions Answers Sheet
  - One page, single sided.
  - *Copy one per team.*
* Team Questions Answers
  - One page, single sided.
  - *Copy one per supervisor. These should not be shown to students.*

STUDENT MATERIALS

- Students should have a pencil or pen.
- Calculators are allowed.
- Spare scribble paper. The Team Questions sheet does not have room for working out.

PROCEDURE

- Students have 30 minutes to complete as many questions as possible.
- Students work as a team. They may consult with each other.
- Units are required when applicable.
- Give each student a copy of the Team Questions.
- Give each team a copy of the Team Questions Answers Sheet
- Students should write the Year, School, and Team Number on the Team Questions Answers Sheet.
- Before time is up, the team must have written their final agreed answer to each question on the Team Questions Answers Sheet.
- At the end of 30 minutes, the supervisor collects the Team Questions Answers Sheet.
- Mark according to the answers provided. Question is incorrect if no units are included.

SCORING

- Points vary per question. Award points as noted.
- The team can collectively earn a maximum of 200 points for this event.

Supervisors may attempt the questions from a separate copy of the Team Questions. *Make additional copies or the Team Questions and Team Questions Answer Sheet as necessary.*

Shoot Out Event

HOST MATERIALS

* An emcee to read the questions aloud.
* Shoot Out Questions
  - *Copy one set for the emcee.*

STUDENT MATERIALS

* Scribble paper and large or dark pens.

or

* A mini whiteboard with a whiteboard marker

PROCEDURE

- Students work individually. They should not consult with each other. They should cover their responses until directed.
- Host reads the first question aloud clearly to students twice.
- Repeating the question more than twice is not allowed.
- Students listen to the question being asked.
- Students have no more than 10 seconds to answer the question.
- Students write their answer large and legible on a piece of scribble paper or mini whiteboard. This must be large enough for the supervisor to see.
- Units are not required.
- When directed by the host, students hold up their answer for the supervisor to see.
- Host reads out the correct answer.
- Supervisor adjudicate student responses.
- Students with correct answers continue on with the next question.
- Students with incorrect answers are eliminated.
- Host reads aloud the next question clearly twice.
- Continue with this until there is only one student left.

SCORING

- The last remaining student is declared the Shoot-Out Winner.
- No points are awarded for this event. QAMT uses it an event to engage the students as the final scores are being tallied by other facilitators in the room for the results presentation at the conclusion of the competition.

Maths Teams Challenge Score Sheet

Team Number	Individual (out of 100)	Relay (out of 200)	Team (out of 200)	Total (out of 500)

Final Results

Place	Team Number
First	
Second	
Third	

Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Individual Questions

Student 1

Instructions : Calculators are not allowed. Write the answer to each question on the line provided.

_____ 1) 4^2

_____ 2) Write 2 out of 4 as a percentage.

_____ 3) Reduce 24:28 to simplest form.

_____ 4) $\sqrt{25}$

_____ 5) $14 - 6 \div 2$

_____ 6) $\frac{5}{19} + \frac{4}{19}$

_____ 7) In 1048, which digit is in the tens place?

_____ 8) Calculate the mean for the values : 9, 7, 8.

_____ 9) Give 54% as a decimal.

_____ 10) 0.8×4

_____ 11) What is the radius of a 24 cm diameter circle?

_____ 12) Simplify $n + n + n$.

_____ 13) How many grams are in half a kilogram.

_____ 14) If $p = 2$, evaluate $p + 12$.

_____ 15) $\frac{2}{21} \times 4$.

_____ 16) A square has sides 7 cm long. Find its perimeter.

_____ 17) $\frac{62000}{100}$

_____ 18) If $x + 6 = 16$, calculate x.

_____ 19) Round 5.3648 to the nearest tenth.

_____ 20) How many seconds are in 0.5 minutes?

Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Individual Questions

Student 2

Instructions : Calculators are not allowed. Write the answer to each question on the line provided.

_____ 1) 6^2

_____ 2) Write 1 out of 4 as a percentage.

_____ 3) Reduce 15:18 to simplest form.

_____ 4) $\sqrt{64}$

_____ 5) $15 + 6 \div 3$

_____ 6) $\frac{2}{9} + \frac{5}{9}$

_____ 7) In 2038, which digit is in the tens place?

_____ 8) Calculate the mean for the values : 5, 3, 4.

_____ 9) Give 78% as a decimal.

_____ 10) 0.6×2

_____ 11) What is the radius of a 22 cm diameter circle?

_____ 12) Simplify $m + m + m$.

_____ 13) How many millilitres are in half a litre.

_____ 14) If $k = 3$, evaluate $k + 6$.

_____ 15) $\frac{3}{13} \times 4$.

_____ 16) A square has sides 6 cm long. Find its perimeter.

_____ 17) $\frac{73000}{100}$

_____ 18) If $x + 5 = 17$, calculate x.

_____ 19) Round 8.5927 to the nearest tenth.

_____ 20) How many seconds are in 1.5 minutes?

Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Individual Questions

Student 3

Instructions : Calculators are not allowed. Write the answer to each question on the line provided.

_____ 1) 5^2

_____ 2) Write 3 out of 4 as a percentage.

_____ 3) Reduce 20:25 to simplest form.

_____ 4) $\sqrt{36}$

_____ 5) $20 - 6 \div 2$

_____ 6) $\frac{4}{13} + \frac{6}{13}$

_____ 7) In 4098, which digit is in the tens place?

_____ 8) Calculate the mean for the values : 3, 1, 2.

_____ 9) Give 65% as a decimal.

_____ 10) 0.3×8

_____ 11) What is the radius of a 62 cm diameter circle?

_____ 12) Simplify $k + k + k + k$.

_____ 13) How many centimetres are in half a metre.

_____ 14) If $w = 5$, evaluate $w + 11$.

_____ 15) $\frac{4}{17} \times 3$.

_____ 16) A square has sides 5 cm long. Find its perimeter.

_____ 17) $\frac{51000}{100}$

_____ 18) If $x + 4 = 18$, calculate x.

_____ 19) Round 3.4639 to the nearest tenth.

_____ 20) How many seconds are in 2.5 minutes?

Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Individual Questions

Student 4

Instructions : Calculators are not allowed. Write the answer to each question on the line provided.

_____ 1) 7^2

_____ 2) Write 4 out of 8 as a percentage.

_____ 3) Reduce 12:16 to simplest form.

_____ 4) $\sqrt{49}$

_____ 5) $16 - 8 \div 4$

_____ 6) $\frac{2}{11} + \frac{4}{11}$

_____ 7) In 8025, which digit is in the tens place?

_____ 8) Calculate the mean for the values : 6, 4, 5.

_____ 9) Give 35% as a decimal.

_____ 10) 0.4×6

_____ 11) What is the radius of a 26 cm diameter circle?

_____ 12) Simplify $a + a + a + a$.

_____ 13) How many millimetres are in half a metre.

_____ 14) If $h = 4$, evaluate $h + 7$.

_____ 15) $\frac{5}{19} \times 3$.

_____ 16) A square has sides 8 cm long. Find its perimeter.

_____ 17) $\frac{84000}{100}$

_____ 18) If $x + 3 = 19$, calculate x.

_____ 19) Round 2.6573 to the nearest tenth.

_____ 20) How many minutes are in 1.5 hours?

Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Individual Questions

Student 5

Instructions : Calculators are not allowed. Write the answer to each question on the line provided.

_____ 1) 8^2

_____ 2) Write 2 out of 8 as a percentage.

_____ 3) Reduce 14:21 to simplest form.

_____ 4) $\sqrt{81}$

_____ 5) $12 + 8 \div 2$

_____ 6) $\frac{3}{17} + \frac{5}{17}$

_____ 7) In 7054, which digit is in the tens place?

_____ 8) Calculate the mean for the values : 8, 6, 7.

_____ 9) Give 75% as a decimal.

_____ 10) 0.8×7

_____ 11) What is the radius of a 28 cm diameter circle?

_____ 12) Simplify $h + h + h$.

_____ 13) How many litres are in half a kilolitre.

_____ 14) If $g = 6$, evaluate $g + 4$.

_____ 15) $\frac{6}{23} \times 3$.

_____ 16) A square has sides 3 cm long. Find its perimeter.

_____ 17) $\frac{95000}{100}$

_____ 18) If $x + 2 = 20$, calculate x.

_____ 19) Round 4.5628 to the nearest tenth.

_____ 20) How many minutes are in 2.5 hours?

Queensland Association of Mathematics Teachers – Rockhampton Branch Answers
Maths Teams Challenge 2020 – Year 7 & 8 Individual Questions

Student 1 Answers

1) 16
2) 50%
3) 6:7
4) 5
5) 11
6) $\frac{9}{19}$
7) 4
8) 8
9) 0.54
10) 3.2
11) 12
12) $3n$
13) 500
14) 14
15) $\frac{8}{21}$
16) 28
17) 620
18) 10
19) 5.4
20) 30

Student 2 Answers

1) 64
2) 25%
3) 2:3
4) 9
5) 16
6) $\frac{8}{17}$
7) 5
8) 7
9) 0.75
10) 5.6
11) 14
12) $3h$
13) 500
14) 10
15) $\frac{18}{23}$
16) 12
17) 950
18) 18
19) 4.6
20) 150

Student 3 Answers

1) 25
2) 75%
3) 4:5
4) 6
5) 17
6) $\frac{10}{13}$
7) 9
8) 2
9) 0.65
10) 2.4
11) 31
12) $4k$
13) 500
14) 16
15) $\frac{12}{17}$
16) 20
17) 510
18) 14
19) 3.5
20) 150

Queensland Association of Mathematics Teachers – Rockhampton Branch Answers
Maths Teams Challenge 2020 – Year 7 & 8 Individual Questions

Student 4 Answers

1) 49
2) 50%
3) 3:4
4) 7
5) 14
6) $\frac{6}{11}$
7) 2
8) 5
9) 0.35
10) 2.4
11) 13
12) $4a$
13) 5000
14) 11
15) $\frac{15}{19}$
16) 32
17) 840
18) 16
19) 2.7
20) 90

Student 5 Answers

1) 36
2) 25%
3) 5:6
4) 8
5) 13
6) $\frac{7}{9}$
7) 5
8) 4
9) 0.78
10) 1.2
11) 11
12) $3m$
13) 500
14) 9
15) $\frac{12}{13}$
16) 24
17) 730
18) 12
19) 8.6
20) 90

Scores

Year

_____

School

_____

Team

_____

Student 1	
Student 2	
Student 3	
Student 4	
Student 5	
TOTAL	

out of 100

Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Relay Questions

1) Calculate the sum of 31 and six times 7.

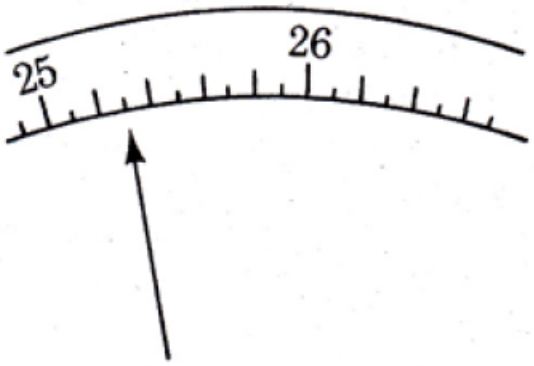
Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Relay Questions

2) I buy 3 burgers for $4.25 each and two drinks at $2.40 each. How much change do I get from $20.00?

Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Relay Questions

3) I am thinking of a number between 1 and 20. When I triple it then add 16 the answer is 20 less than 3 multiplied by 30. Identify this number.

4) The diagram below shows part of a scale on a measuring device.
What is the reading shown by the arrow?



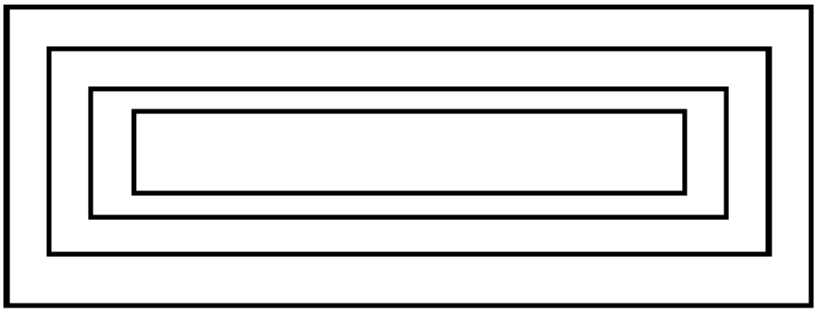
Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Relay Questions

5) The product of two positive numbers is 24 and their difference is 5. Calculate the sum of these two numbers.

6) The digits of the year 2015 are arranged in descending order and then in ascending order. What is the difference of the resulting two numbers?

7) Evaluate $(0.2)^3$. Give your answer as a fraction.

8) The inner most rectangle is 16 cm by 3 cm and each border is 1.5 cm in width. Calculate the perimeter of the outer most rectangle. Give your answer in centimetres.



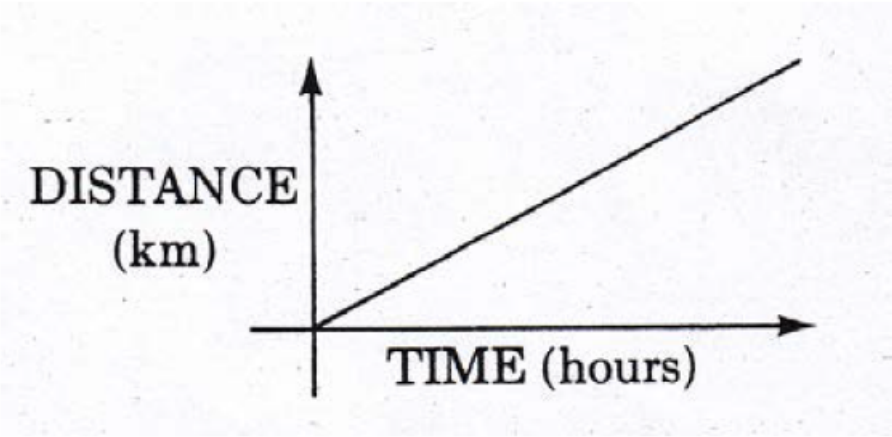
Note : The diagram is not drawn to scale.

Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Relay Questions

9) A group of 6 friends all text each other exactly once on the weekend. How many texts are sent in total between the friends?

10) The sum of three consecutive odd numbers is 27. Identify the largest of these three numbers.

11) The graph relating the distance a car travels to the time taken for the trip is a straight line as shown.

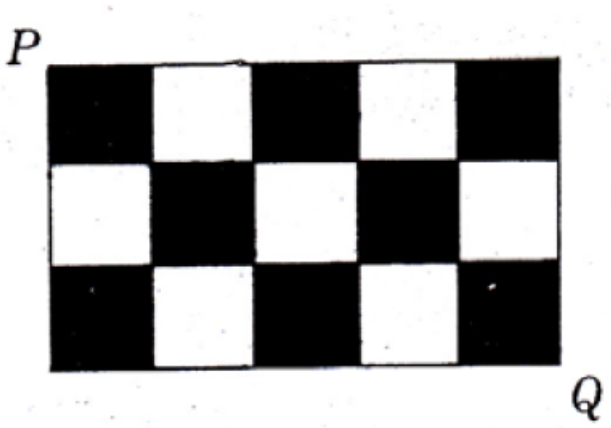


Choose the best answer from the options below.

The graph indicates that the car is
A) speeding up
B) slowing down
C) travelling up hill
D) travelling at a constant speed
E) stationary
F) going around a corner

12) Beth is now five times the age of James. In eight years time, she will be three times the age of James. How old, in years, is James now?

13) Fifteen square tiles with sides 10 cm each are arranged as shown. An ant walks along the edges of the tiles, always keeping a black tile on its left. If the ant continued in this manner, calculate the shortest distance, in cm, that the ant could walk to get from P to Q.



14) A special jelly doubles its volume every 2 minutes. At 9 am a small amount of the jelly is placed in a jar and at 10 am the jar becomes exactly full. At what time was the jar one-quarter full?

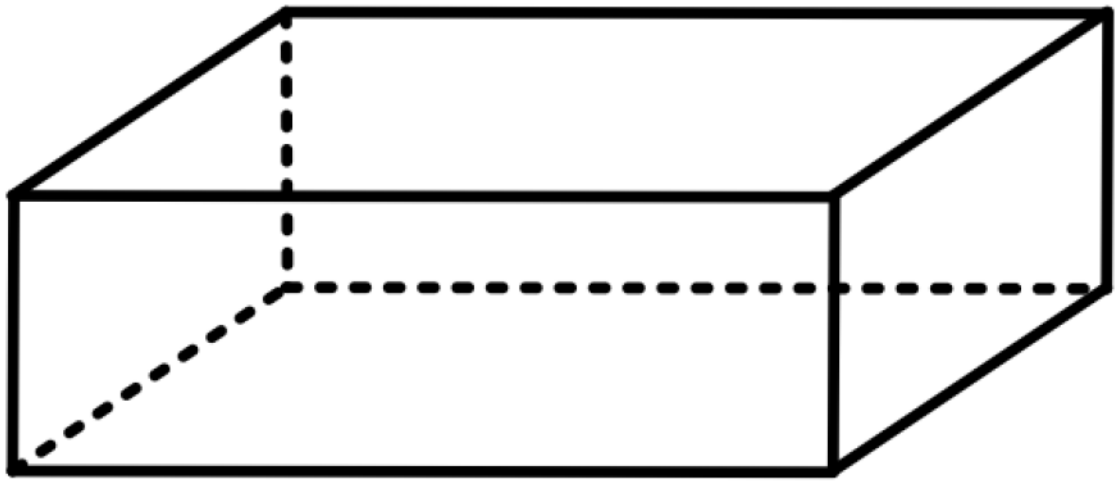
15) Identify the fraction that is exactly half way between $\frac{1}{4}$ and $\frac{1}{6}$.

16) A bag contains 20 marbles coloured either red, white, blue, or green. There is one more red than white, 4 more white than blue, and one more blue than green. If one marble is selected at random out of the bag, what is the probability that it will be blue? Give your answer as a decimal.

Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Relay Questions

17) A textbook is opened and the product of the two page numbers is 59292. Determine the larger of the two page numbers.

18) How many pairs of parallel edges are there in the rectangular prism shown?

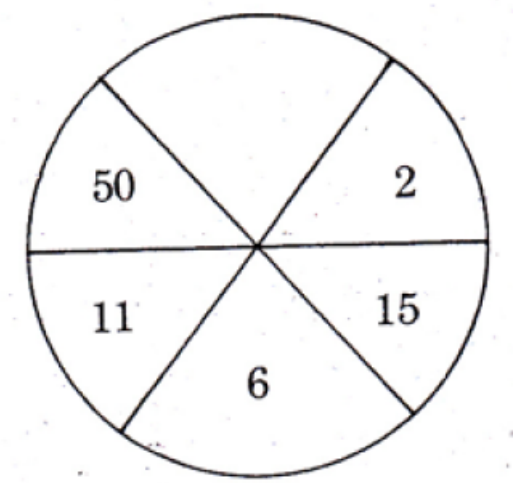


19) Five friends line up behind each other at the bus stop, single file. Two of the friends must always be next to each other in line. How many different ways can the five friends line up?

20) At certain times of the day the two hands of a clock point precisely the same direction (eg midday). Determine the number of times this will happen between 3 am on Tuesday and 3 am the next day.

Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Relay Questions

21) In the diagram there exists a pattern between integers occupying opposite sectors. Identify the integer value which would correctly fill the empty sector according to this pattern.



22) Jack climbed up the beanstalk at a uniform rate. At 2 pm he was one-sixth of the way up and at 4 pm he was three-quarters of the way up. What fraction of the beanstalk had Jack climbed up at 3 pm?

23) Identify the digit in the units column of the answer to 7^{38}.

24) At the end of 1970, my grandfather decided to keep his 1970 calendar. He did this for every year after that, until the time came that he had a calendar that could be used for any year in the future. After which year did he stop collecting calendars.

25) I have two analog watches that have hands. One gains one minute per day and the other loses 1.5 minutes per day. If I set them both to the correct time now, how many days will it take until they both next tell the correct time together?

Queensland Association of Mathematics Teachers – Rockhampton Branch
Year 7 & 8 Maths Teams Challenge 2020 – Relay Questions Answers

Year Level : 7 or 8 (circle one)

School : _____ Team Number : _____

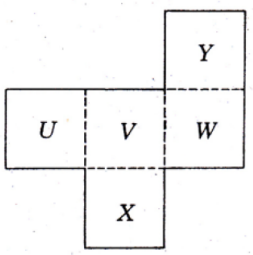
Question	Relay Answers	Attempt				Score			
R25	1440 days	1	2	3	P	8	6	4	0
R24	1996	1	2	3	P	8	6	4	0
R23	9	1	2	3	P	8	6	4	0
R22	$\frac{11}{24}$	1	2	3	P	8	6	4	0
R21	23	1	2	3	P	8	6	4	0
R20	22	1	2	3	P	8	6	4	0
R19	48	1	2	3	P	8	6	4	0
R18	18	1	2	3	P	8	6	4	0
R17	244	1	2	3	P	8	6	4	0
R16	0.15	1	2	3	P	8	6	4	0
R15	$\frac{5}{24}$	1	2	3	P	8	6	4	0
R14	9:56 am	1	2	3	P	8	6	4	0
R13	100 cm	1	2	3	P	8	6	4	0
R12	8 years old	1	2	3	P	8	6	4	0
R11	D	1	2	3	P	8	6	4	0
R10	11	1	2	3	P	8	6	4	0
R9	30 texts	1	2	3	P	8	6	4	0
R8	74 cm	1	2	3	P	8	6	4	0
R7	$\frac{1}{125}$	1	2	3	P	8	6	4	0
R6	5085	1	2	3	P	8	6	4	0
R5	11	1	2	3	P	8	6	4	0
R4	25.3	1	2	3	P	8	6	4	0
R3	18	1	2	3	P	8	6	4	0
R2	\$2.45	1	2	3	P	8	6	4	0
R1	73	1	2	3	P	8	6	4	0
Total									

out of 200

Queensland Association of Mathematics Teachers – Rockhampton Branch
Maths Teams Challenge 2020 – Year 7 & 8 Team Questions

1) Henry received two successive discounts. First was a 10% discount. Then he also got a 25% discount on the already reduced amount. What was Henry's overall percentage discount?
(10 points)

2) A piece of cardboard is cut out and labelled as shown below. It is folded along the dotted lines to make an open-topped box. Identify which letter will be on the bottom of the box.
(10 points)



Questions 3 & 4 relate to the table below.

Quantity	Weight	Quantity	Weight
1 cup butter or margarine	8 oz	2 tablespoons flour (plain or self-raising)	1 oz
1 cup water or milk	8 oz	3 tablespoons cornflour	1 oz
1 cup flour (plain or self-raising)	4 oz	1 tablespoon raw rice	1 oz
1 cup crystal sugar	8 oz	1 tablespoon butter	1 oz
1 cup castor sugar	6 oz	1½ tablespoons dried fruit	1 oz
1 cup raw rice	8 oz	2 tablespoons cocoa	1 oz
1 cup coconut	3 oz	5 tablespoons coffee powder	1 oz
To covert between imperial and metric weights, assume that 250 g is equivalent to 8 oz. A standard metric cup has a capacity of 250 ml			

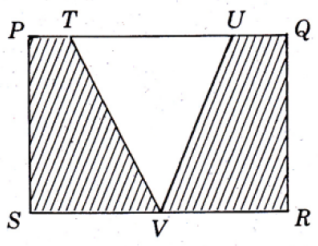
3) How many tablespoons are equivalent to a one cup?
(10 points)

4) When rice is cooked in water it expands to three times its volume. If 125 grams of raw rice is cooked, how many cups of cooked rice will result?
(20 points)

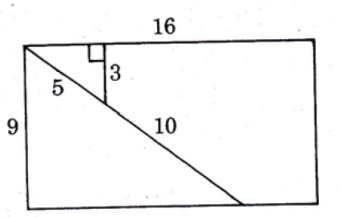
5) A lotto prize of $108,000 was shared between Tyson, Beth, and Abbie. Since Tyson put in the least money for the lotto ticket, he only gets 1 share. Beth gets 2 shares. Since Abbie put in the most money, she gets 3 shares. Determine the difference between the dollar amounts Tyson and Abbie get.
(20 points)

6) On a map with a scale of 1:1000000, Abbots Town measures 3.5 cm from Bourke and 4.2 cm from Cartersville. Abbots Town is between Bourke and Cartersville such that all three towns can be joined by the same straight line. Calculate the actual distance, in kilometres, between Bourke and Cartersville.
(20 points)

7) In the diagram below, $PQRS$ is a rectangle in which $PQ = 12$ cm and $QR = 8$ cm. V lies on the side SR and the points T and U lie on the side PQ such that $PT = UQ = 2$ cm. Calculate the area that is shaded.
(20 points)



8) This 16 m by 9 m rectangle is cut in the manner shown below. The pieces, when rearranged, form a square. Determine the perimeter of this square.
(30 points)



9) Max ate one-third of a cake. Jenna ate one-third of what Max didn't eat. Sarah ate one-third of the cake that remained after that. What fraction of the original cake is there now? Answer as a fraction in simplest form.
(30 points)

10) A certain solar system contains a single sun and two planets, Zarcon and Arium. On each planet, time is measured in days and years. On Zarcon, a day is the length of time it takes for the planet to complete a full rotation on its axis and a year is the length of time it takes the planet to revolve around the sun. Similarly, the periods of rotation and revolution of Arium determine its day and year, respectively. The table below contains these values in Earth time.

Planet	**Length of Day** (in Earth days)	**Length of Year** (in Earth years)
Zarcon	3.5	9
Arium	0.7	6

How many Zarcon days is equivalent to one Arium year?
Round your answer to the nearest day.
(30 points)

Queensland Association of Mathematics Teachers – Rockhampton Branch
Year 7 & 8 Maths Teams Challenge 2020 – Team Questions Answers Sheet

Year Level : 7 or 8 (circle one)

School : _____ Team Number : _____

Question	Answers	Score	Points
T1			10
T2			10
T3			10
T4			20
T5			20
T6			20
T7			20
T8			30
T9			30
T10			30
Total			

out of 200

Estimation Event Response : _____

Queensland Association of Mathematics Teachers – Rockhampton Branch
Year 7 & 8 Maths Teams Challenge 2020 – Team Questions Answers

Question	**Answers**	**Points**	
T1	32.5%	10	
T2	V	10	
T3	8 tablespoons	10	
T4	1.5 cups	20	
T5	\$36,000	20	
T6	77 km	20	
T7	64 cm^2	20	
T8	48 m	30	
T9	$\frac{8}{27}$	30	
T10	626 days	30	
Total		200	

Queensland Association of Mathematics Teachers − Rockhampton Branch
Maths Teams Challenge 2020 − Year 7 & 8 Shoot Out Questions

Round 1

1. How many hours are in two and a half days?
   60

2. Correctly spell the word denominator.
   denominator

3. True or False : Two is a prime number.
   true

4. A compass and protractor are common mathematical tools found in a kent set. Which is the flat plastic semicircle?
   protractor

5. How many hours have elapsed starting from 10 am and finishing at 6 pm on the same day.
   8

6. Give an example of a reflex angle.
   Any value between 180 and 360 degrees.

7. What is the probability of rolling an odd number of a six-sided die?
   $\mathbf{\frac{1}{2}}$

8. The perimeter of a circle is otherwise known as . . .
   circumference

9. In 24 hour time, what is 1 pm?
   13:00

10. State the number that is opposite the 5 on a six sided die.
    2

11. A circular prism is more commonly known as . . .
    a cylinder

12. Name the type of triangle that has no sides the same length?
    scalene

13. Give the answer to 18 squared.
    324

14. Multiply two fifths by one sixth.
    two thirtieths

15. The total sum of all interior angles in a quadrilateral is equal to . . .
    360

16. As a roman numeral, V is equivalent to what value?
    5

17. The line in the middle of a fraction is called . . .
    the vinculum

18. One decade has how many years?
    10

19. Compute $\sqrt{16} + \sqrt{25}$.
    9

20. The hypotenuse of a right triangle is always opposite which angle?
    the right angle

Queensland Association of Mathematics Teachers − Rockhampton Branch
Maths Teams Challenge 2020 − Year 7 & 8 Shoot Out Questions

Round 2

1. Round 1578 to the nearest hundred.
   1600

2. Give the geometrical name of half a sphere.
   a hemisphere

3. Correctly spell the word infinity.
   infinity

4. Which is bigger : negative 13 or negative 3?
   negative 3

5. Compute the square root of 121.
   11

6. Define the relationship between two parallel lines.
   they will never cross or they have the same slope but different y-intercepts

7. State the coordinates of the origin on a Cartesian coordinate plane.
   $(\mathbf{0}, \mathbf{0})$

8. Give three hundredths as a fraction in lowest terms.
   $\frac{\mathbf{3}}{\mathbf{100}}$

9. Convert one centimetre to metres.
   0.01

10. What characteristic allows a polygon to be a 'regular' polygon?
    The sides are all the same length.

11. State the formula for finding the area of a circle.
    $\mathbf{A} = \pi\mathbf{r^2}$

12. Add three fourths and one half, giving your answer as an improper fraction.
    $\frac{\mathbf{5}}{\mathbf{4}}$

13. As a roman numeral, L is equivalent to what value?
    50

14. Correctly spell the word isosceles.
    isosceles

15. Calculate the area of a rectangle that is 4 cm by 8 cm.
    32

16. Convert 5 pm into 24 hour time.
    17:00

17. One million has how many zeros?
    6

18. Compute three cubed.
    27

19. A regular hexagon has how many sides?
    6

20. Give the reciprocal of four ninths.
    $\frac{\mathbf{9}}{\mathbf{4}}$

Queensland Association of Mathematics Teachers

Rockhampton Branch

Maths Teams Challenge

_____

name

from _____

school

participated at this competition in Year _____

_____

date

Queensland Association of Mathematics Teachers

Rockhampton Branch

This is to certify that

_____

supervised at the Year 7 & 8 Maths Teams Challenge incorporating engaging mathematical activities.

AITSL Standard 3 – Plan for and implement effective teaching and learning
AITSL Standard 7.4 – Engage with professional teaching networks and broader communities

2.5 hours of professional development

_____
date

Suella Lye
President