

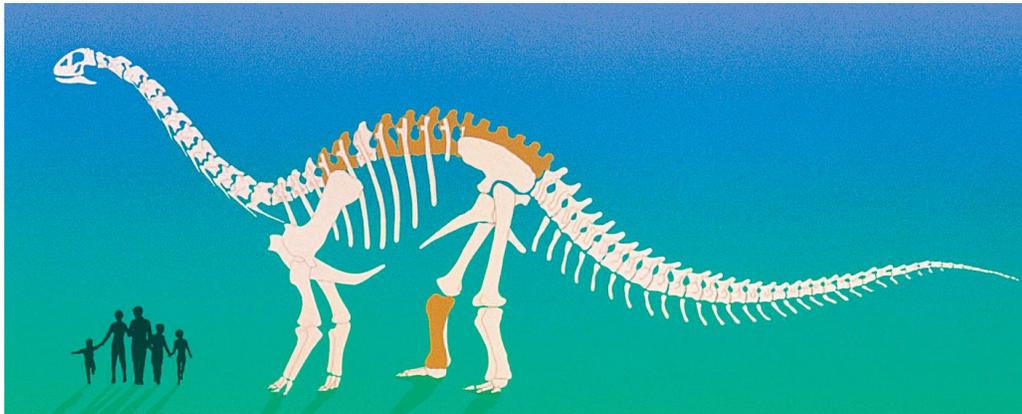
Team Questions

1. Any responsible citizen knows that if you reuse you're doing your bit to save the Earth! In the following sum, each letter has been replaced with a different digit from 0 to 9.

Find the value of each letter.

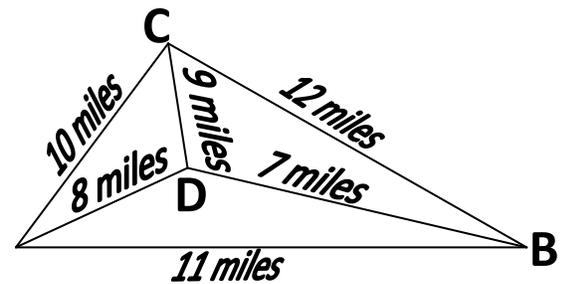
$$\begin{array}{r} \text{REUSES} \\ + \text{SAVES} \\ \hline \text{PLANET} \end{array} \quad (\text{Hint: } V=1)$$

2. The fossil of a now-extinct Mathiosaurus is discovered. It is 37 metres long. Its tail is twice as long as its neck, and its body is 2 metres longer than half its neck.



How long is the body of the fossil of the Mathiosaurus?

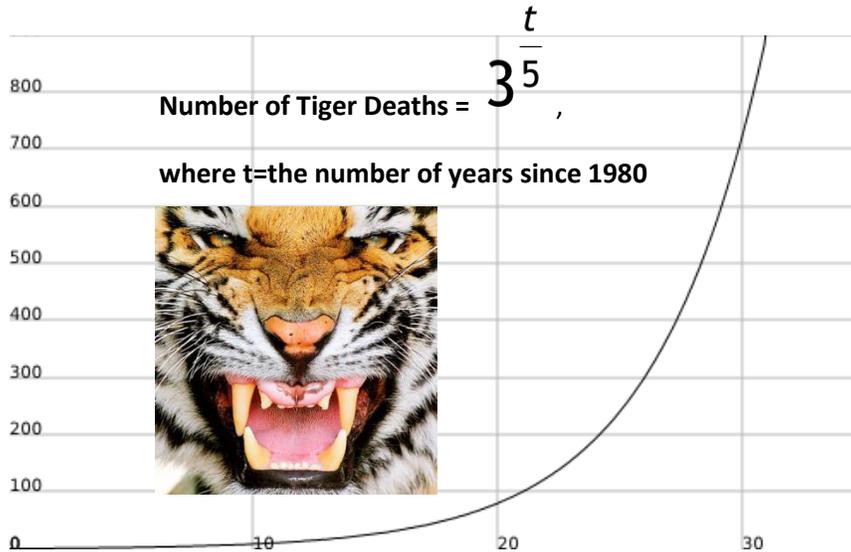
3. The NHS is trying to reduce its carbon footprint. A community nurse leaves the Health Centre (A) and must visit patients at B, C and D: the distance between these locations is shown on the map (not to scale). The nurse may visit the patients in any order but she must go to each town once and only once.



What is the length of the shortest (and therefore most eco-friendly) route that she can take?

Team Questions

4. The hunting of tigers is prohibited globally but illegal hunting has been increasing. A scientist has been recording the number of tiger-hunting deaths since 1980 and has discovered the following relationship:



Calculate the number of deaths in 2010 if the scientist's formula is accurate.

5. Elaine has excess land and intends to set up some renewable energy sources. She is going to install a combination of windmills and water turbines. A consultant has told her that if she installs:

-1 water turbine and 12 windmills it will generate 36MWh each year

-3 water turbine and 8 windmills it will generate 38MWh each year

How much energy does 1 water turbine generate each year?

6. Find a four-digit number such that the number formed by reversing the digits is four times the original number.



RATS x 4 = STAR



Team Questions

7. Logan is an artist who uses recycled scrap metal to make decorative metal cubes. He buys a crushed car which he melts down in a container that is 1.6m by 1m by 90cm high. He pours the molten mixture into small 20cm cubes.



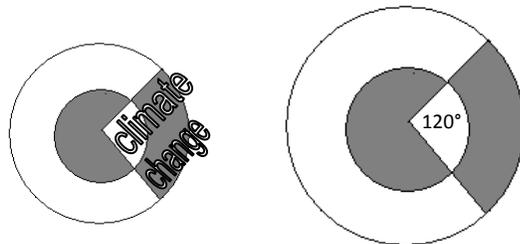
How many of these cubes can Logan make?



8. Chris the zookeeper is in charge of two endangered species in his zoo: the **brown pelican** and the **black rhino**. Some breeding has taken place but unfortunately cold weather has meant some have died too. At the start of the week, Chris counted 24 heads in the enclosure and 56 feet. When he checked again at the end of the week, Chris found just 23 heads but 58 feet!

How many rhinos were born during the week?

9.



Climate Change focus group have a logo consisting of two concentric circles of radii r and $2r$ respectively, with a minor sector of angle 120° .

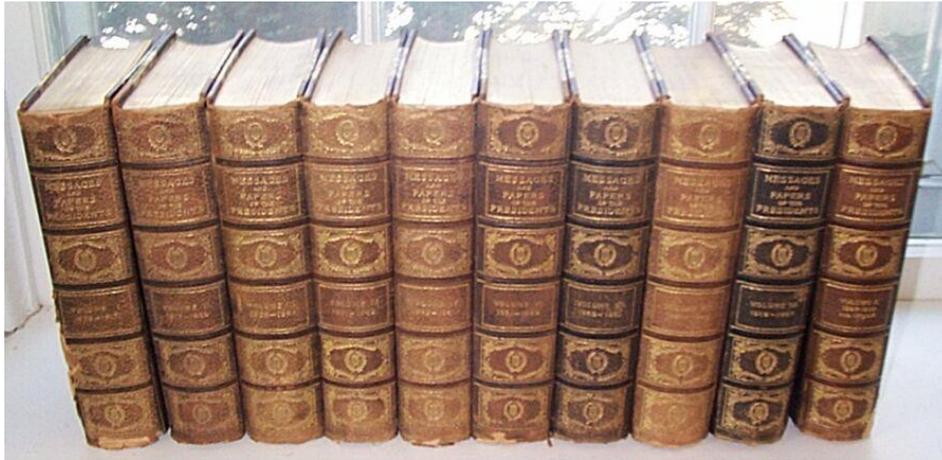
What is the ratio of the total unshaded area to the total shaded area (in its simplest form)?

Team Questions

10. Daisy is three years older than her sister Heidi.
The sum of the squares of their ages in years is 317.

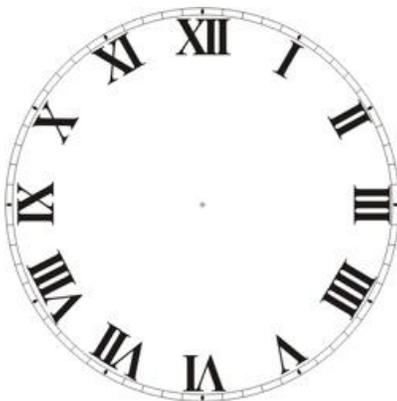
How old are Daisy and Heidi?

11. On a bookshelf there are 10 volumes of climate change research papers.



Each volume contains the same number of papers and the papers are numbered consecutively.

If paper number 351 is the 3rd paper in volume 5, which paper is in the middle of volume 8?

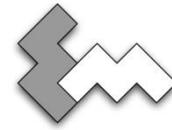


12. The Enterprising Maths competition begins with a warm-up round at 10am and finishes with a prizegiving which will end about 3.50pm.

How many degrees does the **hour hand** of a clock turn through during this time?



Q1	The values are <u>A=7 E=9 L=5 N=8 P=4 R=3 S=6 T=2 U=0</u>	
Q2	The Mathiosaurus' body is <u>7</u> metres long.	
Q3	The shortest route she can take is <u>26</u> miles.	
Q4	The number of deaths in 2010 will be <u>729</u> .	
Q5	Each water turbine will generate <u>6</u> MWh.	
Q6	The values required are <u>A=1 R=2 S=8 T=7 (2178x 4 = 8712)</u>	
Q7	Logan can make <u>180</u> cubes.	
Q8	During the week, <u>2</u> rhinos were born.	
Q9	The ratio of shaded area: unshaded area is <u>7:5</u> .	
Q10	Daisy is <u>14</u> and Heidi is <u>11</u> .	
Q11	The book in the middle of Volume 8 is numbered <u>653</u> .	
Q12	The hour hand will turn through <u>175°</u> .	



Team Answer Sheet

SCHOOL NAME:		
Q1	The values are A= E= L= N= P= R= S= T= U=	
Q2	The Mathiosaurus' body is _____metres long.	
Q3	The shortest route she can take is _____miles.	
Q4	The number of deaths in 2010 will be _____.	
Q5	Each water turbine will generate _____MWh.	
Q6	The values required are A= R= S= T= .	
Q7	Logan can make _____cubes.	
Q8	During the week, _____rhinos were born.	
Q9	The ratio of shaded area: unshaded area is _____:_____.	
Q10	Daisy is _____and Heidi is _____.	
Q11	The book in the middle of Volume 8 is numbered _____.	
Q12	The hour hand will turn through _____.	