

RUGBY WORLD CUP WEIGH-IN

AS TWENTY TEAMS OF SUPERHUMAN GIANTS SPEND SIX WEEKS RUNNING INTO EACH OTHER REALLY FAST, WE TAKE A LOOK AT SOME OF THE STATS BEHIND THE PLAYERS AT THIS YEAR'S RUGBY WORLD CUP. CHECK OUT OUR HANDY MAP OF THE CITIES IN NEW ZEALAND WHERE THE ACTION WILL TAKE PLACE. THEN FLEX YOUR FORMULAE MUSCLES, AND DRAW ON YOUR AVERAGES ACHIEVEMENTS TO SEE IF YOU CAN CONVERT THESE GCSE MATHS CHALLENGES.

BEAST INDEX

All but one of these powerhouse players feature in a Rugby World Cup 2011 Squad. But is speed, height, or weight the most important factor when it comes to working out who the real beasts are?

Player	Country	Weight (kg)	Height (cm)	100 m time (s)
Johnny Wilkinson	England	89	178	11.1
Brian Habana	South Africa	72	179	10.4
Ambam	England	220	182	15.4
Dan Cole	England	118	191	11.5
Anthony Boric	New Zealand	113	200	11.8
Luke Charteris	Wales	129	206	12.6

USING FORMULAE

You can use this formula to work out the Beast Index of a rugby player.

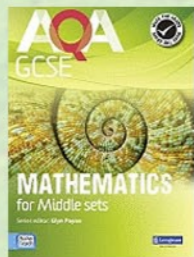
$$\text{Beast Index} = \frac{W \times H}{10T^2}$$

W = weight in kg
H = height in cm
T = 100 m time in s

- GRADE C** 1 a Use the formula to calculate the Beast Index of each player shown above. Give your answers correct to 3 significant figures.
b Write the players in order of their Beast Index, starting with the highest.
- GRADE B** 2 Legendary All Blacks winger Jonah Lomu had a Beast Index of 21.0. He weighed 96 kg and was 196 cm tall. Use the formula to estimate Jonah Lomu's average speed over 100 m. Give your answer in m/s correct to 3 significant figures.

GREAT RESOURCES FOR GCSE MATHS
For help with formulae, averages, and range check out Longman's AQA GCSE Mathematics for Middle Sets book.

For more info, and for other great free maths activities, visit aqagcsemaths.wordpress.com.



DID YOU KNOW?

Ambam the silverback gorilla surprised visitors at Port Lympne Wild Animal Park in Kent earlier this year. Unlike most gorillas he prefers walking on two legs to four. Presumably so he can leave his hands free to hold a rugby ball and fend off tackles! See Ambam in action at youtube.com/KentAnimalPark. Do you think he'd make a good addition to the England pack?

USING FORMULAE

DID YOU KNOW?

Peter Jackson's film version of the *The Lord of the Rings* trilogy was filmed entirely in New Zealand. More than 150 different locations were used, earning the country the nickname 'Middle Earth'. This Hobbits vs Orcs epic took nearly £2 billion at the box office. Use the formula opposite to calculate the Beast Index of each of these Middle Earth creatures. Who would be most useful on the rugby pitch?

BEASTS OF MIDDLE EARTH 1: HOBBIT

Not much use in a line-out, but the Hobbits' large feet make them surprisingly quick.

Origin: The Shire
Filming location: Matamata
Weight: 70 kg
Height: 105 cm
100 m time: 12.1 s

BEAST INDEX?

BEASTS OF MIDDLE EARTH 2: ORC

Penalty-prone, but more attractive than the average rugby player, Orcs have to be careful to tape down their pointy ears.

Origin: Mordor
Filming location: Rocky Point
Weight: 62 kg
Height: 156 cm
100 m time: 14.2 s

BEAST INDEX?

BEAST VS BEAST

In the 2007 World Cup Final England went head to head with the Springboks, losing by nine points. Here are the weights of the England and South Africa scrums in the 2011 tournament.

AVERAGES AND RANGE

GRADE D 1 Use averages and range to compare fully the weights of the England and South Africa scrums.

GRADE D 2 England substitute one player from their scrum. The range of the weights of the players in the scrum decreases by 3 kg. The mean weight of the players in the scrum increases by 375 g.

a Which player did England substitute?
b How heavy was the replacement player?