

Reasoning and Problem Solving

Percentages – Year 6

About This Resource

This resource is aimed at Year 6 Expected and has been designed to give children the opportunity to consolidate the skills they have learned in Spring Block 2 Percentages.

The questions are based on a selection of the same ‘small steps’ that are addressed in the block, but are presented in a different way so children can work through the pack independently and demonstrate their understanding and skills.

Small Steps

Fractions to percentages

Equivalent FDP

Percentage of an amount

Percentages – missing values

Percentage increase and decrease

Order FDP

National Curriculum Objectives

Mathematics Year 6: (6F11) [Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts](#)

Mathematics Year 6: (6R2) [Solve problems involving the calculation of percentages \[for example, of measures, and such as 15% of 360\] and the use of percentages for comparison](#)

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This exciting, new mobile app gathers all professional sports scores in one place. We aim to be the one-stop app for ALL sports fans. The complexity of managing the scores as they come in, is something we take very seriously. Your role is to help handle those figures and keep us at the top of our game!

1. On our stats page we display the percentage of wins, losses and draws for the top 3 teams or individuals in each sport. We need you to convert the scores to show as percentages for the tech department to upload. Fill in the gaps in the table.

Sport	Team	Played	Wins	%	Losses	%	Draws	%
Football	City	20	15		5		–	
Football	United	25	20		2		3	
Football	Rovers	15	15		–		–	
Rugby	Giants	30	21		6		3	
Rugby	Saints	25	25		–		–	
Rugby	Rhinos	40	32		8		–	

2. For comparison, we display a team's position at this point in the previous season based on their win percentage. The information for the previous season has already been inputted. Calculate this year's information in decimals and use + or – points based on the change from last year. The first one has been done for you.




Team	Last Year	This Year	Difference
Giants	0.8	0.7	–0.1
Saints	0.8		
Rhinos	0.95		

Team	Last Year	This Year	Difference
City	0.5		
United	0.65		
Rovers	0.95		

For each sport, who has made the most progress based on your comparison?

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3. We are keen to monitor the feedback from our end users so the app collects ratings and reviews. See the last month's ratings below:

	37
	10
	3

What percentage of reviews were positive?
 What percentage were either neutral or negative?
 What does that tell us about our users?



4. We are hoping to attract more users between the ages of 12 and 16. Currently, only 5% of our 1240 users are in this age bracket. The target is to increase this to 10% of our users in 6 months. We predict we will have 2560 users by that time. How many of our target age range currently use the app, and how many more will we need to attract to meet the target?

5. The athletics season has started and results from the world championships need to be uploaded. The top four countries have sent through their percentage scores for each event. These need to be converted to fractions.



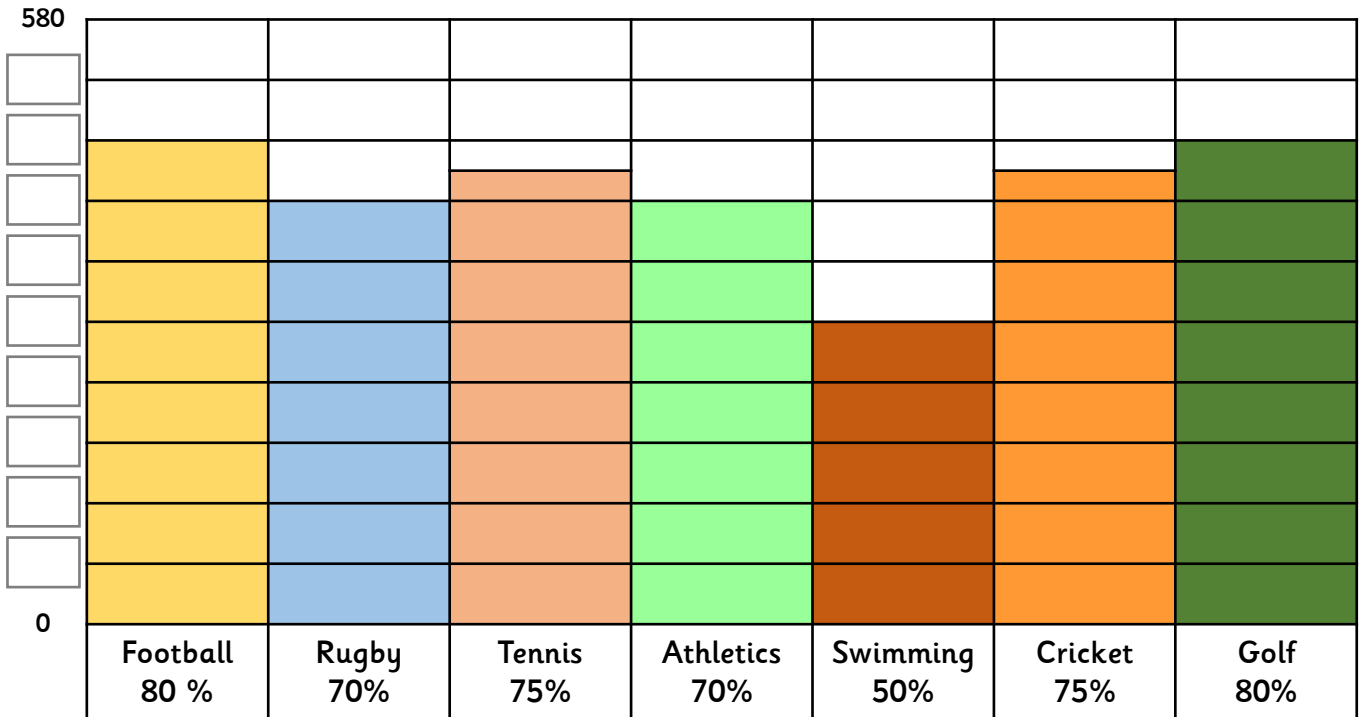
	Shot Put		100m		Hurdles		Long Jump	
America	75%	—	95%	—	50%	—	99%	—
Russia	60%	—	90%	—	60%	—	82%	—
China	50%	—	75%	—	85%	—	79%	—
Brazil	25%	—	80%	—	65%	—	40%	—

Write the countries in order of number of events won most to least?

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6. We have sent a questionnaire to 580 users to find out which additional sports they would like to see included in our service. The results are below. Complete the labels on the block diagram axis.



7. It's tennis season and with the popularity of the vote for tennis, we are going to have a big push on tennis scores. We have a new graphic to compare last year's grand slam scores with this year's score. Calculate the percentage increase or decrease and complete the graphic.

	Previous	Current	Change + or -
E. Burke	80	100	
F. Dyson	130	143	
G. Murray	120	138	
O. Brown	140	105	



8. It's time to plan for next year and our budget is set at £1645. We have been sent the following memo. The boss has asked you to order the budget allocations from most to least amounts of money.

Next year we will be allocating the budget as follows:
 35% on sales and marketing
 1/4 on research
 5% on server upgrades
 1/5 on staffing
 0.15 on app upgrades

AMAZING!!!
 We have been highlighted as 'app of the week' and a tech mag want to do an interview with our chief mathematician – you!!

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1.

Sport	Team	Played	Wins	%	Losses	%	Draws	%
Football	City	20	15	75	5	25	–	0
Football	United	25	20	80	2	8	3	12
Football	Rovers	15	15	100	–	0	–	0
Rugby	Giants	30	21	70	6	20	3	10
Rugby	Saints	25	25	100	–	0	–	0
Rugby	Rhinos	40	32	80	8	20	–	0

2.

Team	Last Year	This Year	Difference
Giants	0.8	0.7	–0.1
Saints	0.8	1	+0.2
Rhinos	0.95	0.8	–0.15

Team	Last Year	This Year	Difference
City	0.5	0.75	+0.25
United	0.65	0.8	+0.15
Rovers	0.95	1	+0.05

Saint and City have made the most improvement in terms of games won.

3. 74% were positive, while 26% were either neutral or negative. It tells us the majority of users are happy with the app, only 6% were unhappy with their experience.

4. Currently, 62 users are in the target age range. Our target for 6 month time is 256 users between 12 and 16, so we need an increase of 194 users in that age range.

5.

	Shot		100m		Hurdles		Long Jump	
America	75%	$\frac{3}{4}$	95%	$\frac{19}{20}$	50%	$\frac{1}{2}$	99%	$\frac{99}{100}$
Russia	60%	$\frac{3}{5}$	90%	$\frac{9}{10}$	60%	$\frac{3}{5}$	82%	$\frac{41}{50}$
China	50%	$\frac{1}{2}$	75%	$\frac{3}{4}$	85%	$\frac{17}{20}$	79%	$\frac{79}{100}$
Brazil	25%	$\frac{1}{4}$	80%	$\frac{4}{5}$	65%	$\frac{13}{20}$	40%	$\frac{2}{5}$

America won the most events (3), then China (1) and Brazil and Russia did not win any events.

6. Labels from bottom to top should read: 58, 116, 174, 232, 290, 348, 406, 464, 522.

7.

	Previous	Current	Change + or –
E. Burke	80	100	+25%
F. Dyson	130	143	+10%
G. Murray	120	138	+15%
O. Brown	140	105	–25%

8. The order of amounts are: 35%, $\frac{1}{4}$, $\frac{1}{5}$, 0.15, 5%.

This works out at: £575.75, £411.25, £329, £246.75, £82.25