12 Dogs Maths – Teacher notes and answers

Contents

12 Dogs KS1 Teacher notes and answers

Number within 20

Teacher notes: To help students understand and to aid students with a vision impairment, one object could be represented by another. For example, one colour of pups could be represented by cubes and the other could be represented by counters. You could ask the class to choose how they want to represent the puppies and ask them to find objects that they can use in the classroom.

You could ask the class how many blue puppies there are to help them understand zero (for a child with a VI ask - how many stars are there?).

I can add and subtract within 20 - 12 puppies

Count how many black furred and how many yellow furred puppies there are?

There are **3** puppies with black fur

There are **9** puppies with yellow fur

There are **12** puppies altogether

If 6 of the puppies are boys, how many are girls?

Put a B in the boxes under 6 of the puppies, how many puppies are left?

6 of the puppies are girls.

If we know how many puppies there are with yellow fur and that 5 of the puppies with yellow fur are boys, how can we use all the information to work out how many of the yellow furred puppies are girls? Write this as a calculation.

9 -5 = 4 girls

Can you work out many black furred puppies are boys and how many black furred puppies are girls? To work out how many of the boy puppies have black fur. Use the total number of boys and take away the number of yellow furred puppies who are boys to find your answer.

6 -5 = 1 boy

To work out how many of the girl puppies have black fur. Use the total number of girls and take away the number of yellow furred puppies who are girls to find your answer.

6 -4 = 2 girls.

Puppy Names Code Breaker
I can add and subtract numbers within 30

Work out the names of Abby's 12 puppies, by solving the calculations and using the code breaker to find the correct letter.

The tables below contain letters in row one with corresponding numbers in row two.

A	B	C	D	E	F	G	H	I	J	K	L	M
1	2	3	4	5	6	7	8	9	10	11	12	13

N	O	P	Q	R	S	T	U	V	W	X	Y	Z
14	15	16	17	18	19	20	21	22	23	24	25	26

Answer 1 = A (Arrow)
Answer 12 = L (Elmo)
Answers 6 = F and 18 = R (Ford)
Answers 8 = H and 26 = Z (Chaz)
Answers 2= B, 24 = X and 20 = T (Baxter)
Answers 15 = O, 12 = L and 1 = A (Lola)
Answers 7 = G, 12 = L and 5 = E (Goldie)
Answers 4 = D, 5 = E and 12 = L (Dell)
Answers 11 = K, 9 = I, 18 = R, and 1 = A (Kira)
Answers 9 = I, 14 = N, 3 = C and 1 = A (Inca)
Answers 13 = M, 9 = I, 12 = L, 12 = L and 25 = Y (Milly)
Answers 10 = J, 5 = E, 19 = S, 19 = S, 9 = I and 5 = E (Jessie)

12 Dogs KS2 Answers

Decimals

Can you work out the missing weights using the information in the table?

Chaz week one - 0.43 + 0.18 = **0.61**	Elmo week one - 0.40 + 0.26 = **0.66**
Baxter week two - 0.51 + 0.35 = **0.86**	Dell week two - 0.54 + 0.36 = **0.90**
Ford week two - 0.65 + 0.53 = **1.18**	

Can you work out the missing weights using the information in the table?

Goldie 0.54 -0.14 = **0.40**	Inca 0.52 -0.16 = **0.36**
Jessie 0.63 -0.18 = **0.45**	Lola 0.54 -0.15 = **0.39**
Kira's week one weight is 1.00 -0.38 = **0.62**	Kira's birthweight was 1.00 -0.52 = **0.48**
Milly's week one weight is 1.04 -0.41 = **0.63**	Milly's birthweight was 1.04 -0.61 = **0.43**

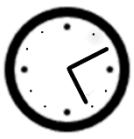
Measurement - Time – teacher notes and answers

Teacher notes - Use a large or tactile clock face to enable a student with a vision impairment to read the time more easily, or by using touch. The student can also use the clock face to set the correct time for the drawing activity.

Our puppies were all born in the early hours of the morning. Write the times shown on each clock.

Elmo - 10 minutes past 6	Milly - 8 minutes past 6
Lola – 15 minutes to 5	Baxter - 5 minutes to 6
Inca – 25 minutes past 4	Goldie – 10 minutes past 4

Our puppies were all born in the early hours of the morning. Draw the hands on the clocks for the time each puppy was born.

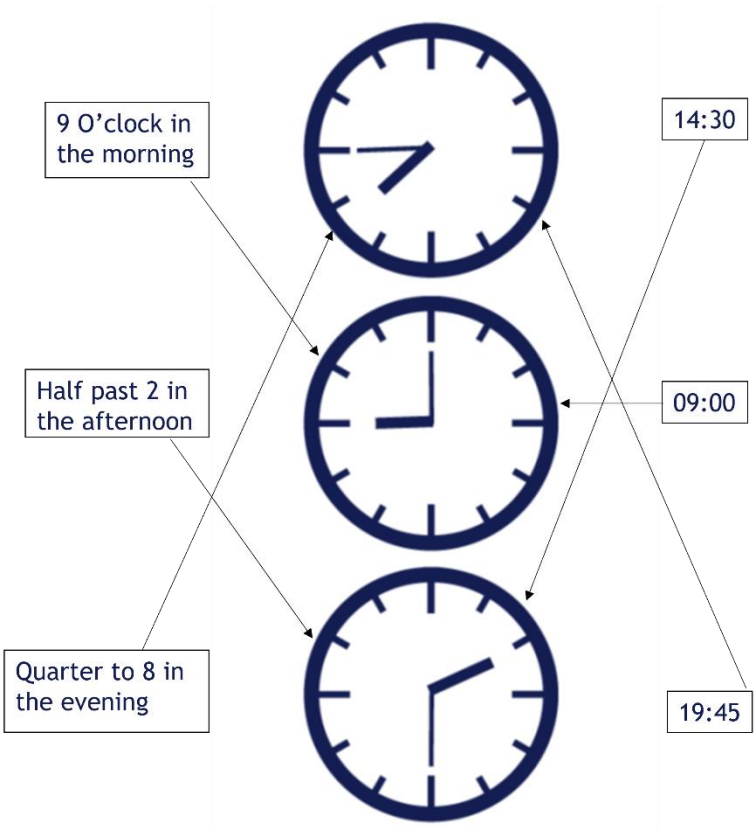
Kira - 5 minutes past 4 	Ford - half past 6 	Dell - 15 minutes to 6 
Arrow - 4 o'clock 	Jessie - 10 minutes past 5 	Chaz - 5 minutes past 6 

Sort the puppies into the order they were born - **Answers**

Time	Name
04:00	Arrow
04:05	Kira
04:10	Goldie
04:25	Inca
04:45	Lola
05:10	Jessie
05:45	Dell
05:55	Baxter
06:05	Chaz
06:08	Milly
06:10	Elmo
06:30	Ford

Our puppies are fed 3 times a day when they start eating solid food, these are the times Abby's pups are fed. Match the times to the clocks showing the same time.

Answers: The first clock face, quarter to 8 in the evening and 19:45. The second clock face, 9 o'clock and 09:00. The third clock face, half past 2 in the afternoon and 14:30.



12 Dogs KS3 Answers

12 Dogs Mean, Median and Range

Table 1 male puppy weights - answers

Puppy	Range - Birth to 6 weeks
Arrow	3260
Baxter	3170
Chaz	3290
Dell	3220
Elmo	3350
Ford	3610

Which of the male puppies has the smallest weight range? Baxter
How could this affect their growth and development? They may have health issues and be underweight as an adult dog.
Which of the male puppies has the largest weight range? Ford
How could this affect their growth and development? They may have health issues and be overweight as an adult dog.
What factors could cause these differences in weight between the puppies? Growth in the womb, ability to get to mum's milk. Ford being larger than the others to begin with, may have pushed the smaller puppies out of the way. With 12 pups to feed it would be easy for one of the smaller pups to miss out.

Table 3 Female puppy weights Answers

	Mean	Median	Range
Birth	418.33	415	120
Week 1	580	580	110
Week 2	986.67	1005	200
Week 3	1453.33	1450	110
Week 4	2121.67	2095	190
Week 5	2813.33	2805	300
Week 6	3750	3765	350

What is the average weight of the female pups when they are born? 418.33
Is there any correlation between the average weight (mean) and the middle value (median)? The value is almost the same/ very similar, so the puppy weights don't vary too much.
What can this tell us about the puppies? They are all similar in size, if the Mean (average) and the Median (middle) were very different it would suggest one result was skewed and that puppy was either very under or very overweight. It could mean a puppy was unwell and not getting enough food, or a puppy was getting too much of the food at the cost of the others.

How does the range of weights differ over the 6 weeks of data?
During week 2 the range increases there is a bigger difference between the weight of the smallest puppy and the largest puppy. This happens again at weeks 5 and at week 6 there is 350g difference between the smallest and largest puppy.

Why could this be important to Guide Dogs?
This could be indicating that one puppy is falling behind with its growth in relation to the others, or that the larger puppy is exceeding the growth of its siblings. We know from the mean and median that across all of the puppies the weight is spread quite evenly, but we can see that the range of weights is increasing, so it's something to keep monitoring.

How could the volunteers have influenced the reduction in range when the puppies were weighed at 3 weeks old?
The pups would have been weighed just after the volunteers started feeding them puppy food, which could have enabled the pups who were getting less milk to catch up with the others. They would have started handling the pups, making sure they all had time with mum to feed.

What factors could have had an impact on the range when the puppies were weighed at 5 weeks old?
They were beginning to play, exercise and build muscle, some would have been more active than others. By the time they reached 6 weeks old they were fully weaned (no longer receiving milk) onto puppy food.

Maths word problems – Application of number

What time was Dell born? 5:45am
What time was Milly born? 6:08am
Calculate the number of minutes it took from the first pup being born to the last pup? 150 minutes
All the puppies were weighed when they were born, use the following table to answer the questions below.

Puppy/ weight in	Birth	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Baxter	370g	510g	860g	1420g	2000g	2690g	3540g
Chaz	430g	610g	930g	1580g	2090g	2750g	3720g
Elmo	400g	660g	990g	1480g	2210g	2820g	3740g
Goldie	400g	540g	1010g	1450g	2150g	2710g	3780g
Inca	360g	520g	880g	1430g	2080g	2710g	3550g
Jessie	450g	630g	1080g	1400g	2060g	2800g	3900g
Kira	480g	620g	1000g	1480g	2100g	3010g	3800g
Lola	390g	540g	910g	1450g	2090g	2840g	3720g

What is the weight difference between Lola and Inca at birth and at 2 weeks? 30g and 30g
What percentage difference is there between Lola and Inca's weight at birth? 8%
What percentage difference is there between Lola and Inca's weight at 2 weeks? 3.4%
What does the weight difference in grams and the percentage difference tell us?
The weight difference between the two puppies is 30g on each weigh- in which suggests not much has changed but the percentage difference is 8% at birth and 3.4% at two weeks. This means the difference between their sizes has decreased, it provides a more precise view of how the puppies are growing in relation to each other.

Use the weights table to work out the percentage increase in weight of the following:

Puppy	**Percentage increase from birth to week 1**	**Percentage increase from week 2 to 3**	**Percentage increase from week 5 to 6**	**Percentage increase birth to week 6**
Chaz	42%	70%	35%	765%
Elmo	65%	49%	33%	835%
Kira	29%	48%	26%	692%
Goldie	35%	44%	39%	845%

Compare the percentages for each individual puppy's growth over the 6 weeks. What does the information tell us?
The puppies are all growing at different rates. During birth to week one Elmo had a big growth spurt the others had theirs between week 2 and 3. They all show similar growth during weeks 4 to 6. Of all the puppies, Chaz had the biggest percentage increase of 70%.
When Abby's puppies were born, they only fed from their mums' milk, their eyes were closed and their movement was limited.

At 25 days old, Abby's pups all had their eyes open and they were eating solid food. Each puppy had 15g of dry food per meal 3 times a day. At 4 and a half weeks old they were each given 25g per meal 3 times a day. At 5 weeks this increased to 40g each per meal 3 times a day.

There are 3 sizes of puppy food bags which Guide Dogs could purchase to feed Abby's puppies, a 2kg bag, a 4kg bag and an 8kg bag. Use the information in the text to complete the table below by calculating how many days to one decimal place, each bag would last the 12 puppies at the different stages of their growth.

Puppy age/ bag	**A 2kg bag would last**	**A 4kg bag would last**	**An 8kg bag would last**
25 days old	3.7	7.4	14.8
4 and a half weeks	2.2	4.4	8.9
5 weeks old	1.4	2.8	5.6

Example

15x 3x 12 = 540g

2000g ÷ 540 = 3.7 days

Complete the following table to work out how much you would pay per kg of food for each bag size.

Bag size	**Cost of the bag**	**Cost per kg**
2kg	£12.49	**£6.25**
4kg	£19.99	**£5**
8kg	£32.49	**£4.06**

You need 30kg of food to support the litter of puppies for the 1st 6 weeks of their life. Use the cost of the bags in the table, to work out the differences in cost if you purchased 8kg bags or 4kg bags? Remember you'll need to purchase enough bags of food to last the full 6 weeks. £29.96

8kg x 4 = £129.96

4kg x 8 = 159.92

How much food from each bag would you have left over? 2kg

At Guide Dogs we have a responsibility to spend the money we are given from donations wisely. Which option gives the best value for money?

Purchase three 8kg bags then one 4kg bag and one 2kg bag.

Abby's pups have all left mum and are now with their volunteer puppy raisers, learning about the world around them.

End of document