

Year 6

Ratio Solve Problems Involving Percentages

Challenge Cards



Ratio Solve Problems Involving Percentages

Challenge Cards

1. Pavel needs to calculate 24% of any amount.

Work alone or with a partner to come up with 3 different ways of finding 24% of an amount.

Explain why you prefer one method.



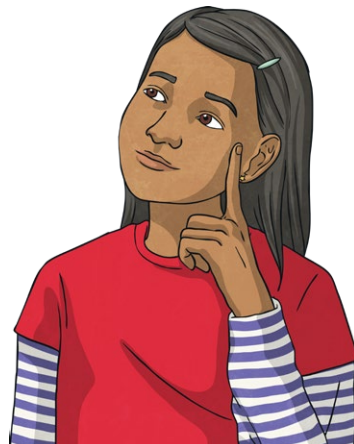
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2. Nikita needs to calculate 67% of any amount.

Work alone or with a partner to come up with 2 different ways of finding 67% of an amount.

Explain why you prefer one method.



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3. George needs to calculate 79% of any amount.

Work alone or with a partner to come up with 3 different ways of finding 79% of an amount.

Explain why you prefer one method.



4. Pavel has to find percentages of 360° .

Calculate these and check with a partner. Discuss how you found each answer.

6%		45%		71%	
13%		49%		80%	
24%		58%		86%	
37%		67%		92%	

5. Nikita has to find percentages of 750ml.

Calculate these and check with a partner. Discuss how you found each answer.

5%		42%		81%	
11%		50%		87%	
27%		64%		93%	
36%		75%		99%	

6. George has to find percentages of £6.40, rounding to the nearest penny.

Calculate these and check with a partner. Discuss how you found each answer.

2%		33%		78%	
9%		46%		85%	
13%		54%		90%	
21%		68%		96%	

7. Pavel needs to buy a litre of orange juice. The shop to which he goes sells 2 different cartons of juice.



85p with 40% off



75p with $\frac{1}{3}$ off

Pavel says the carton marked 85p with 40% off is cheaper.

Explain to a partner why Pavel is not correct.

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8. Nikita is going to buy 5kg potatoes. She has 3 choices.



£2.80 with 30% off



£1.32; buy 2 get second 50% off



72p 1/3 off; buy 4, get one free

Work alone or with a partner to find the cheapest way for Nikita to buy 5kg potatoes.

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9. George needs to buy 24m of rope. A local hardware shop has packs of rope and rope on a reel, which is sold by the metre.



£3.40 buy 2 get 25% discount. 12m for £3.40. Buy 2, get a 25% discount.



23p per metre for first 10m, 15% discount per metre after that.

Show how the cheapest way for George to buy the rope is by the metre.

Ratio Solve Problems Involving Percentages

Challenge Cards

10. Pavel and Nikita collect some data about favourite colours in their school. They find the following percentages like the colours in the table below. Complete the table by calculating the required angle, and then draw the pie chart.

Colour	Percentage	Required angle
Red	28%	
Yellow	21.5%	
Blue	29%	
Green	12.5%	
Orange	9%	

Ratio Solve Problems Involving Percentages Answers

1. Pavel needs to calculate 24% of any amount.

Find 25% by dividing by 4 (half and half again).

Find 1% by dividing by 100. Subtract 1% from 25%.

Find 20% by dividing by 5 (divide by 10 and double)

Find 2% by dividing 20% by 10. Add 20% + 2% + 2%.

Find 10% by dividing by 10. Find 1% by dividing by 100.

Add 10% × 2 + 1% × 4.

Other solutions are possible.

2. Nikita needs to calculate 67% of any amount.

Find 50% by halving, find 10% by dividing by 10, 5% by halving 10% and 1% by dividing 10% by 10. Add 50% + 10% + 5% + 1% × 2.

Find 20% by dividing by 5 (divide by 10 and double), 5% by halving 10% and 1% by dividing 10% by 10. Add 20% × 3 + 5% + 1% × 2.

Other solutions are possible.

3. George needs to calculate 79% of any amount.

Find 25% by dividing by 4 (half and half again).

Find 1% by dividing by 100. Add 25% × 3 + 1% × 4.

Find 20% by dividing by 5 (divide by 10 and double), find 1% by dividing by 100. Find 80% by 20% × 4 (double, double) and subtract 1%.

Find 50% by halving, 10% by dividing by 10, 5% by halving

10% and 1% by dividing by 100. Add 50% + 10% × 2 + 5% + 1% × 4.

4. Pavel has to find percentages of 360°.

6%	21.6°	45%	162°	71%	255.6°
13%	46.8°	49%	176.4°	80%	288°
24%	86.4°	58%	208.8°	86%	309.6°
37%	133.2°	67%	241.2°	92%	331.2°

5. Nikita has to find percentages of 750ml.

5%	37.5ml	42%	315ml	81%	607.5ml
11%	82.5ml	50%	375ml	87%	652.5ml
27%	202.5ml	64%	480ml	93%	697.5ml
36%	270ml	75%	562.5ml	99%	742.5ml

6. George has to find percentages of £6.40, rounding to the nearest penny.

2%	£0.13	33%	£2.11	78%	£4.99
9%	£0.58	46%	£2.94	85%	£5.44
13%	£0.83	54%	£3.46	90%	£5.76
21%	£1.34	68%	£4.35	96%	£6.14

7. Pavel needs to buy a litre of orange juice. The shop to which he goes sells 2 different cartons of juice.

$\frac{1}{10}$ off 75p, costs 50p

40% off 85p, costs 51p

Ratio Solve Problems Involving Percentages **Answers**

8. Nikita is going to buy 5kg potatoes. She has 3 choices.

5kg £2.80 with 30% off (£1.96)

2.5kg £1.32; buy 2 get second 50% off (£1.98)

1kg 72p 1/3 off; buy 4, get one free (£1.92)

The cheapest option is buying 1kg 72p 1/3 off; buy 4, get one free.

9. George needs to buy 24m of rope. A local hardware shop has packs of rope and rope on a reel, which is sold by the metre.

12m rope @£3.40 buy 2 get 25% discount (£5.10)

Rope sold by length @23p per metre for first 10m, 15% discount per metre after that. (£5.03)

10 Pavel and Nikita collect some data about favourite colours in their school. They find the following percentages like the colours in the table below. Complete the table by calculating the required angle, and then draw the pie chart.

Colour	Percentage	Required angle
Red	28%	100.8°
Yellow	21.5%	77.4°
Blue	29%	104.4°
Green	12.5%	45°
Orange	9%	32.4°

