

I SEE REASONING YEAR 2

Tasks to inspire mathematical thinking

Different Ways

Make 34p
Use 10p and 1p coins
Do in different ways

I know... so...

$$18 + 5 = 23$$

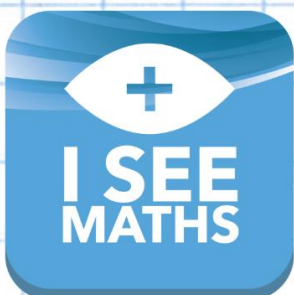
$$1 + 8 =$$

$$5 + 18 =$$

$$14 + 19 =$$

Fill the Gaps:

A tree is part of...
... is a part of a tree



BY GARETH METCALFE

Available for digital download

Explain the Mistakes

$6 + 4 = \square$

Partition 4 into 3 and 1

✗

$8 + 5 = \square$

Partition 5 into 1 and 4

✗

Which Answer?

$7 + 4 = \square$

Partition 4 into 2 and 2

Partition 4 into 3 and 1

$7 + 3 = \square$

Partition 3 into 2 and 1

Do not partition 3

Read the Pictures

Partition 3 into and <math>8 + 3 = \text{ </math>	Partition 4 into and <math>9 + 4 = \text{ </math>
Partition 4 into and <math>7 + 4 = \text{ </math>	Partition 5 into and <math>8 + 5 = \text{ </math>
Partition 3 into and <math>9 + 3 = \text{ </math>	Partition 6 into and <math>9 + 6 = \text{ </math>
Partition 4 into and <math>8 + 4 = \text{ </math>	Partition 5 into and <math>7 + 5 = \text{ </math>
Partition 6 into and <math>7 + 6 = \text{ </math>	Partition 5 into and <math>9 + 5 = \text{ </math>

Finish the Pictures

$9 + 3 = \boxed{12}$

$9 + \boxed{1} + \boxed{2}$

$8 + 5 = \boxed{}$

$8 + \boxed{} + \boxed{}$

$7 + 4 = \boxed{}$

$7 + \boxed{} + \boxed{}$

$9 + 4 = \boxed{}$

$9 + \boxed{} + \boxed{}$

$7 + 5 = \boxed{}$

$7 + \boxed{} + \boxed{}$

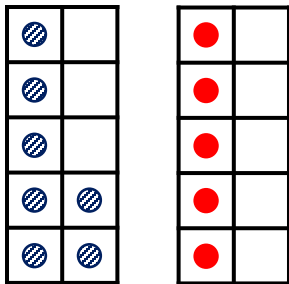
$8 + 3 = \boxed{}$

$8 + \boxed{} + \boxed{}$

Different Ways

$7 + 5 = \boxed{}$

I did $5 + 5 + \boxed{}$



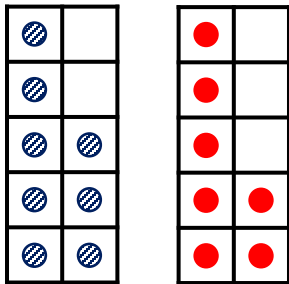
I did $7 + 3 + \boxed{}$

I did double $\boxed{}$

Explain

$8 + 7 = \boxed{}$

I made a 10



I used a doubles fact

Different Ways

How many dots? No counting!

First, I count the 5s

I made a 10

Move one dot

Count the gaps

Explain

How many dots? No counting!

dots

dots

dots

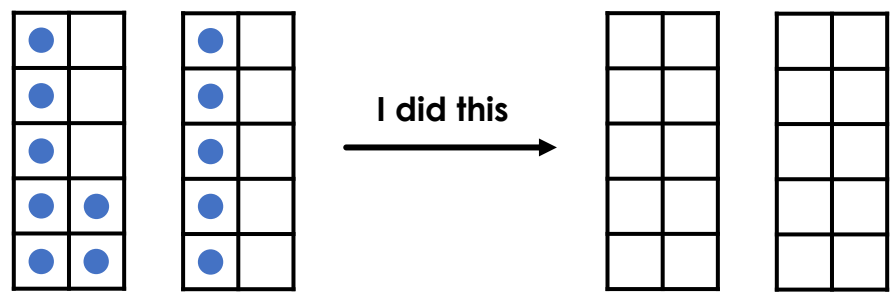
dots

dots

dots

Explore

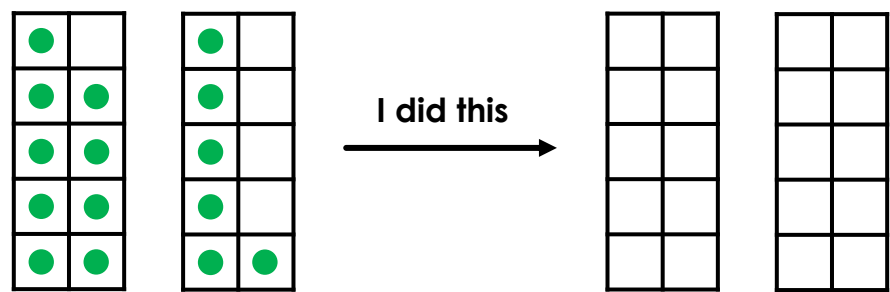
Move the dots to make the question **easier**.



$$7 + 5 = \boxed{}$$

Explore

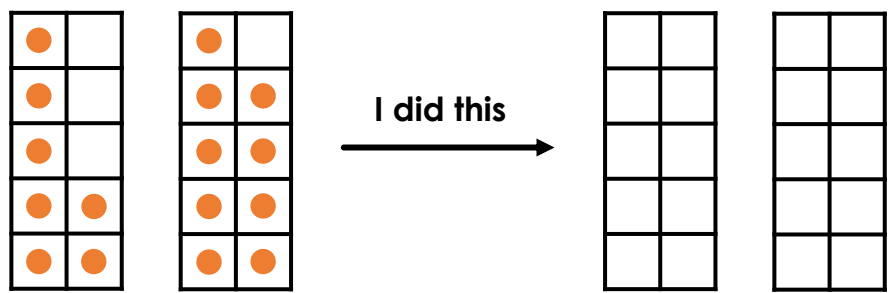
Move the dots to make the question **easier**.



$$9 + 6 = \boxed{}$$

Explore

Move the dots to make the question **easier**.



$$7 + 9 = \boxed{}$$

Read the Pictures

$6 + 6 = \square$
 $\downarrow$ so
 $7 + 6 = \square$

$9 + 9 = \square$
 $\downarrow$ so
 $9 + 8 = \square$

$7 + 7 = \square$
 $\downarrow$ so
 $7 + 8 = \square$

Read the Pictures

$8 + 8 = \square$
 $\downarrow$ so
 $8 + 9 = \square$

$6 + 6 = \square$
 $\downarrow$ so
 $5 + 6 = \square$

$7 + 7 = \square$
 $\downarrow$ so
 $8 + 6 = \square$

I know... so...

Double 7 = 14

8 + 7 =

6 + = 13

7 + 7 = 14

8 + 6 =

+ 7 = 15

I know... so...

Double 8 = 16

8 + 9 =

+ 8 = 15

8 + 8 = 16

8 + 7 =

7 + = 16

Small Difference Questions

$5 + 5 =$

$6 + 6 =$

$7 + 7 =$

$6 + 4 =$

$7 + 7 =$

$6 + 7 =$

$4 + 6 =$

$7 + 6 =$

$6 + 8 =$

$4 + 7 =$

$8 + 6 =$

$5 + 9 =$

Small Difference Questions

$5 + 5 =$

$6 + 6 =$

$7 + 7 =$

$7 + 5 =$

$5 + 7 =$

$7 + 9 =$

$8 + 6 =$

$5 + 8 =$

$6 + 8 =$

I know... so...

$10 + 4 = 14$
 $9 + 4 = \square$

$7 + 3 = 10$
 $7 + 4 = \square$

$7 + 7 = 14$
 $7 + 8 = \square$

I know... so...

$10 + 3 = 13$
 $9 + 3 = \square$

$6 + 6 = 12$
 $6 + 5 = \square$

$5 + 5 = 10$
 $7 + 5 = \square$

$6 + 6 = 12$
 $7 + 6 = \square$

$10 + 6 = 16$
 $6 + 10 = \square$

$2 + 8 = 10$
 $3 + 8 = \square$

$6 + 4 = 10$
 $7 + 4 = \square$

$7 + 7 = 14$
 $7 + 6 = \square$

$7 + 7 = 14$
 $8 + 6 = \square$

Small Difference Questions

$10 + 3 =$	$6 + 6 =$	$7 + 3 =$
$9 + 3 =$	$7 + 6 =$	$7 + 4 =$
$9 + 4 =$	$6 + 7 =$	$4 + 7 =$
$9 + 5 =$	$6 + 8 =$	$5 + 6 =$

I know... so...

$10 + 6 = 16$
 $9 + 6 = \square$

$6 + 4 = 10$
 $6 + 5 = \square$

$8 + 8 = 16$
 $9 + 8 = \square$

I know... so...

$10 + 5 = 15$
 $9 + 5 = \square$

$9 + 9 = 18$
 $9 + 8 = \square$

$7 + 5 = 12$
 $8 + 5 = \square$

$7 + 7 = 14$
 $7 + 8 = \square$

$6 + 10 = 16$
 $6 + 9 = \square$

$3 + 7 = 10$
 $2 + 8 = \square$

$4 + 6 = 10$
 $5 + 6 = \square$

$8 + 8 = 16$
 $8 + 7 = \square$

$8 + 8 = 16$
 $9 + 7 = \square$

Small Difference Questions

$6 + 10 =$

$6 + 6 =$

$7 + 3 =$

$6 + 9 =$

$7 + 7 =$

$7 + 4 =$

$9 + 6 =$

$8 + 7 =$

$7 + 5 =$

$8 + 6 =$

$9 + 6 =$

$8 + 4 =$

How Many Ways?

Put **15 counters** on two 10-frames.

Put more counters in this 10-frame.

- Level 1:** Find one way
- Level 2:** Find different ways
- Level 3:** Find all the ways

How Many Ways?

Put **13 counters** on two 10-frames.

Put more counters in this 10-frame.

- Level 1:** Find one way
- Level 2:** Find different ways
- Level 3:** Find all the ways

Extend

Question A:
Put **11 counters** on two 10-frames.

Question B:
Put **16 counters** on two 10-frames.

Which question has more answers? Question A **OR** Question B

Which Answer?

Use < = >

$$2 + 10 \quad \square \quad 8 + 6$$

$2 + 10 > 8 + 6$
 10 is more than 8

$2 + 10 < 8 + 6$
 12 is less than 14

Small Difference Questions

Use < = >

$4 + 5 \quad \square \quad 10$

$8 \quad \square \quad 5 + 3$

$4 + 6 \quad \square \quad 10$

$4 + 5 \quad \square \quad 8 + 1$

$7 + 2 \quad \square \quad 5 + 3$

$4 + 6 \quad \square \quad 3 + 8$

$4 + 5 \quad \square \quad 7 + 1$

$2 + 7 \quad \square \quad 5 + 3$

$6 + 4 \quad \square \quad 8 + 3$

Small Difference Questions

Use < = >

$7 + 5 \quad \square \quad 10$

$11 \quad \square \quad 8 + 3$

$8 + 6 \quad \square \quad 9$

$7 + 5 \quad \square \quad 10 + 2$

$7 + 4 \quad \square \quad 8 + 3$

$8 + 6 \quad \square \quad 9 + 5$

$7 + 4 \quad \square \quad 10 + 2$

$7 + 3 \quad \square \quad 8 + 3$

$7 + 5 \quad \square \quad 8 + 4$

Explain

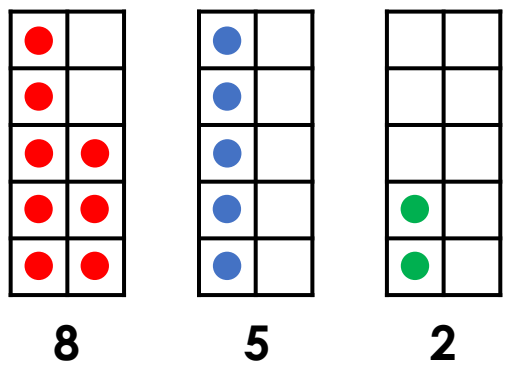
Answer each question. Which question has more answers?

$12 > 7 + \square$

$12 = 7 + \square$

$12 < 7 + \square$

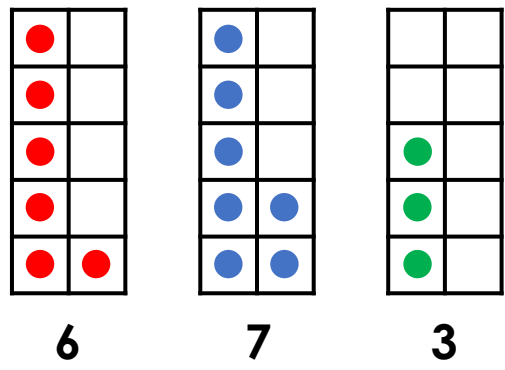
Read the Picture



Add + first

$$8 + 5 + 2 = \boxed{}$$

Read the Picture



Add + first

$$6 + 7 + 3 = \boxed{}$$

Explain

6 7 4

Add + first

$$6 + 7 + 4 = \boxed{}$$

$$3 + 5 + 5 = \boxed{}$$

Add + first

3 7 5

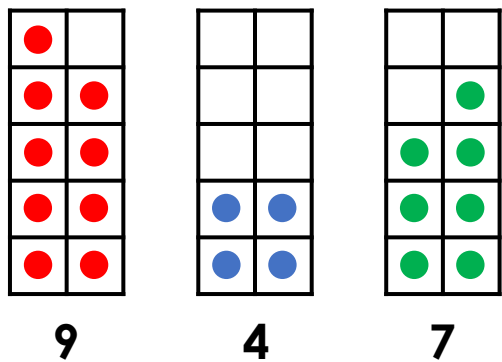
Add + first

$$3 + 7 + 5 = \boxed{}$$

$$2 + 4 + 8 = \boxed{}$$

Add + first

Explain



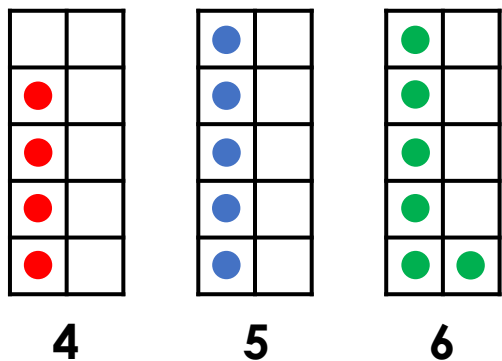
First, add... and...

Move the dots to make...

My way is to...

$$9 + 4 + 7 = \boxed{}$$

Explain



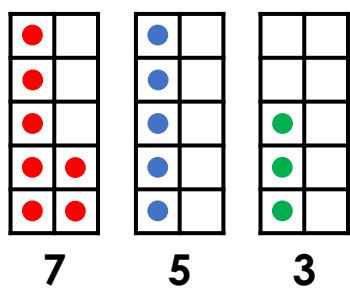
First, add... and...

Move the dots to make...

My way is to...

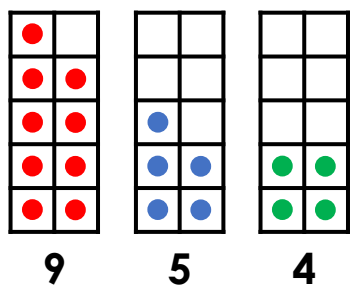
$$4 + 5 + 6 = \boxed{}$$

Read the Pictures



$$7 + 5 + 3 = \boxed{}$$

My method:



$$9 + 5 + 4 = \boxed{}$$

My method:

I know... so...

Example:

$4 + 4 = 8$

$4 + 3 + 1 = 8$

$5 + 5 = 10$

$5 + \square + \square = 10$

$3 + 7 = 10$

$3 + \square + \square = 10$

$6 + 5 = 11$

$\square + \square + \square = 11$

$7 + 7 = 14$

$\square + \square + \square = 14$

Explain the Mistake

Answer using three of the digits:

1

3

5

2

4

6

$\square + \square + \square = 8$

$6 + 1 + 1 = 8$ ✗

How Many Ways?

$\square + \square + \square = 10$

Answer using three of the digits:

Order the digits from largest to smallest in your answers.

- Level 1: Find an answer
- Level 2: Find different answers
- Level 3: Find all the answers

1

3

5

7

2

4

6

8

1

2

3

4

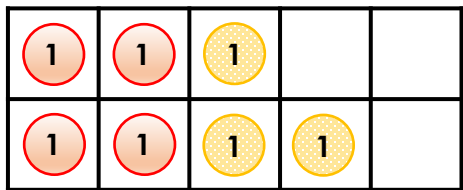
5

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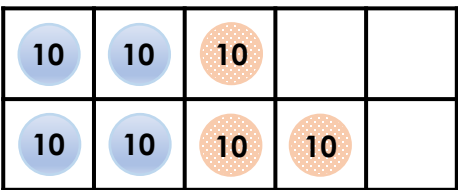
7

8

I know... so...

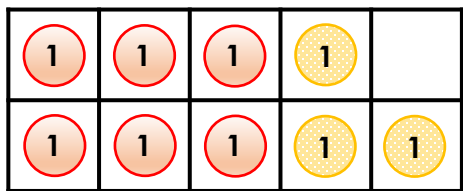


$$4 + 3 = \square$$

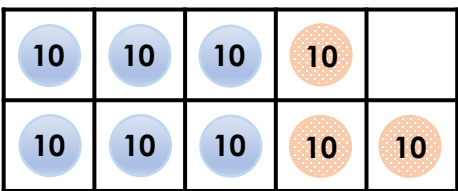


$$40 + 30 = \square$$

I know... so...

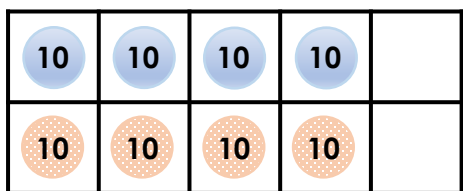


$$6 + 3 = \square$$

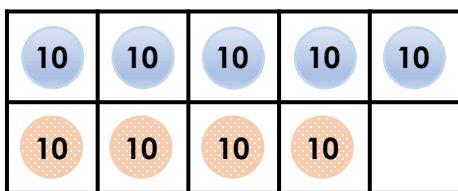


$$60 + 30 = \square$$

Spot the Difference

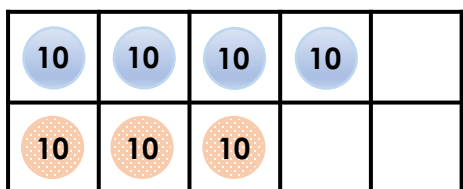


$$\square + \square = \square$$

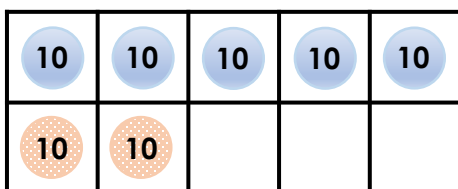


$$\square + \square = \square$$

Spot the Difference

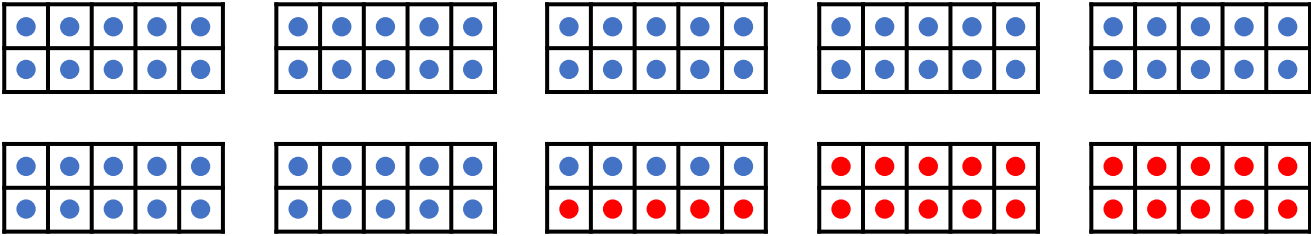


$$\square + \square = \square$$

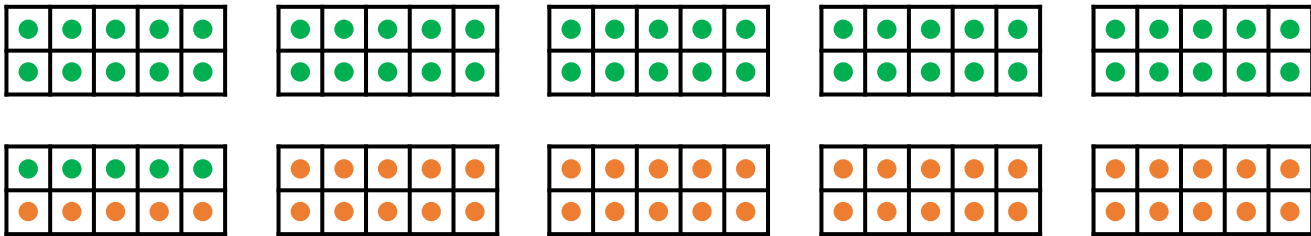


$$\square + \square = \square$$

Read the Pictures

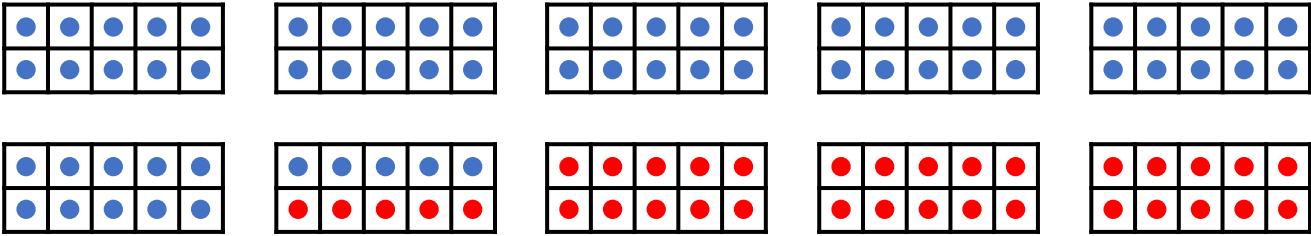


$$\square + \square = 100$$



$$\square + \square = 100$$

Which Answer?



$$65 + \square = 100$$

35 45

$$85 + \square = 100$$

15 25

$$78 + \square = 100$$

22 32

Rank by Difficulty

$32 + 7 = \square$

$16 + 7 = \square$

Which question was harder? Why?

Rank by Difficulty

$23 + 8 = \square$

$24 + 5 = \square$

Which question was harder? Why?

Different Ways

Fill in the two missing digits. There are three possible answers.

$23 + \underline{\hspace{1cm}} = 3\underline{\hspace{1cm}}$

$23 + \underline{\hspace{1cm}} = 3\underline{\hspace{1cm}}$

$23 + \underline{\hspace{1cm}} = 3\underline{\hspace{1cm}}$

Rank by Difficulty

10	
10	
10	10
10	10
10	10

1	
1	1

+

1	1
1	1
1	1

$83 + 6 =$

10	
10	
10	

1	1
1	1
1	1
1	1

+

1	1
1	1
1	1

$38 + 6 =$

Which question was **harder**: $83 + 6$ OR $38 + 6$
Explain why.

Rank by Difficulty

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$18 + 16 =$

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$34 + 21 =$

Which question was harder? Why?

Rank by Difficulty

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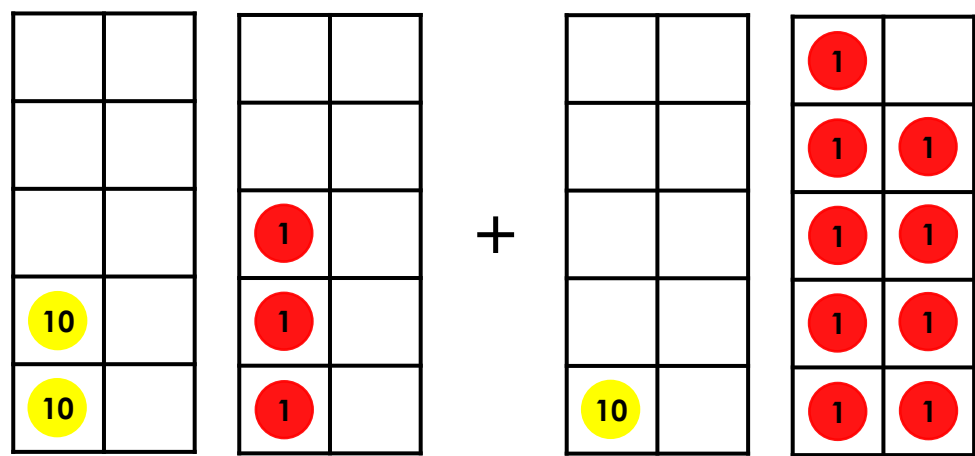
●

$24 + 17 =$

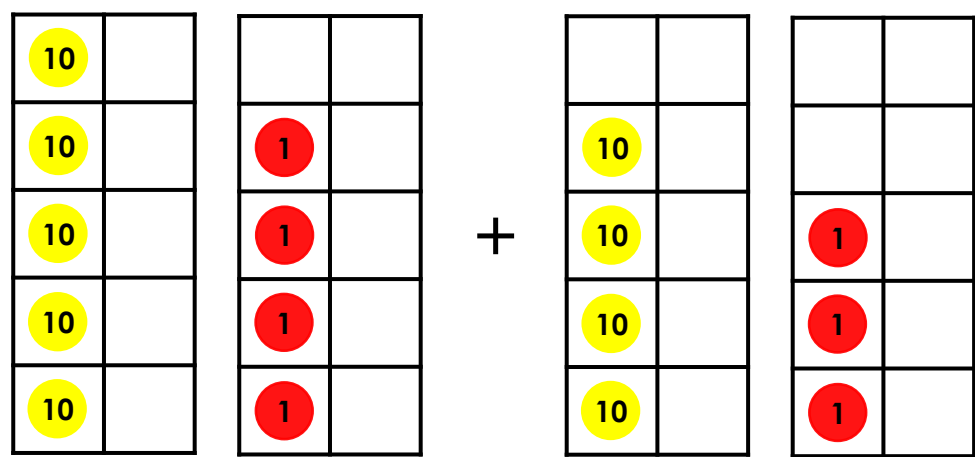
Which question was harder? Why?

Rank by Difficulty

$23 + 19 = \boxed{}$



$54 + 43 = \boxed{}$



Which question was **harder**: **23 + 19** OR **54 + 43**
 Explain why.

Small Difference Questions

Fill the gaps. Use each digit:

$$\square + \square = \square \square$$

1 3 5 8

Fill the gaps. Use each digit:

$$\square \square + \square = \square \square$$

1 2 3 5 8

Extend: Compare your answers. What is the same?

Different Ways

Complete using these digits: 3 4 5 7

$$\square \square + \square \square = 100$$

Extend: Answer in a different way.

$$\square \square + \square \square = 100$$

Different Ways

Complete using **four** of these digits: 1 2 4 6 7

$$\square \square + \square \square = 100$$

Extend: Which digit is not used? Why?

How Many Ways?

Complete using **four** of these digits:

1 3 4 6 7 9

$$\square + \square = \square \square$$

Level 1: Find one way

Level 2: Find different ways

Level 3: Find all the ways

Extend: Which digit is always in the same place? Why?

How Many Ways?

Task 1: Complete using **three** of these digits:

2 3 5 6 9

$$\square + \square = 1 \square$$

Task 2: Complete using the digits:

2 3 5 6 9

$$\square \square + \square = \square \square$$

Level 1: Find one way

Level 2: Find different ways

Level 3: Find all the ways

Extend: Compare your answer for Task 1 and Task 2. What is the same?

I SEE REASONING – Y2

Answers and Guidance

Selected Questions

Addition, page 5:

Different Ways: Use counters in 10-frames to model thinking.

Explain: Use counters in 10-frames to model non-counting strategies, draw out different strategies (make 10, near doubles, count the gaps).

Addition, page 6:

Explore: Use counters in 10-frames to model thinking, children draw how they moved the dots (e.g. $7+5 = 10+2$).

Addition, page 8:

Small Difference Questions: Children identify related facts (I know $6+7$ is one less than double 7) or explain identical answers ($6+8 = 5+9$). To extend, children write another question for each sequence.

Addition, page 9:

Small Difference Questions: Children identify related facts (I know $7+4$ is one more than $7+3$) or explain identical answers ($7+4 = 4+7$). To extend, children write another question for each sequence.

Addition, page 10:

Small Difference Questions: Children identify related facts (I know $8+7$ is one more than double 7) or explain identical answers ($8+7 = 9+6$). To extend, children write another question for each sequence.

Addition, page 11:

How Many Ways? 3 ways: 10 and 5 9 and 6 8 and 7

How Many Ways? 4 ways: 10 and 3 9 and 4 8 and 5 7 and 6

Extend: A has 10 answers: 10 & 1 9 & 2 8 & 3 7 & 4 6 & 5 (reversals).

B has 5 answers: 10 & 6 9 & 7 (reversals) 8 & 8

Fewer counters gives more possible answers. To extend, children can try the same question with different numbers of counters.

Addition, page 12:

Which Answer? Red is correct.

Explain: Left: 0, 1, 2, 3 or 4 Middle: 5 Right: 6 or more

I SEE REASONING – Y2

Answers and Guidance

Selected Questions

Addition, page 13:

All questions: Start by adding the number bond to 10. Questions can be modelled using counters in 10-frames.

Addition, page 14:

Explain: Children explore different possible methods e.g. $10+3+7$

Explain: Children explore different possible methods e.g. $4+6+5$ $5+5+5$

Read the Pictures: Possible methods: $7+3+5$ $7+8$

Possible methods: $9+9$ $10+4+4$

Addition, page 15:

I know... so... Different possible answers, children partition one number e.g. $6+5 = 1+5+5$

Explain the Mistake: Two 1s are used (must use three of the digits).

How Many Ways? 4 answers: $7+2+1$ $6+3+1$ $5+4+1$ $5+3+2$

Addition, page 18:

Rank by Difficulty: Children may think a question is harder if the answer is larger; they may find it harder if the ones values add to more than 10.

Different Ways: $23 + 7 = 30$ $23 + 8 = 31$ $23 + 9 = 32$

Addition, page 19:

Rank by Difficulty: $83 + 6$ has a larger sum. For $38 + 6$, the ones values border to the next 10 (which can be more difficult).

Addition, page 20 and 21:

Rank by Difficulty (all questions): Children may think a question is harder if the answer is larger; they may find it harder if the ones values add to more than 10.

Addition, page 22:

Small Difference Questions: $8 + 5 = 13$ $18 + 5 = 23$ (same ones values)

Different Ways: $53 + 47 = 100$ $57 + 43 = 100$

Different Ways: $74 + 26 = 100$ $24 + 76 = 100$ 1 is not used as 9 is needed for bond to 10 and 8 needed if used in tens column.

I SEE REASONING – Y2

Answers and Guidance

Selected Questions

Addition, page 23:

How Many Ways? 6 ways: $9+7=16$ $9+4=13$ $7+6=13$ (reversals)

How Many Ways? Task 1: $9+6=15$ or $9+3=12$

Task 2: 4 ways: $29+6=35$ $26+9=35$ $59+3=62$ $53+9=62$