

Mental multiplication strategies – compensation

Use the compensation strategy to make it easier to multiply 2-digit numbers that are close to a ten.

Look at 4×19 .

19 is close to 20, so we can multiply by the next multiple of ten which is 20. Then we build down because we have an extra group of 4.

$$4 \times 19 \longrightarrow 4 \times 20 = 80 - 4$$

$$\text{So, } 19 \times 4 = 76$$

1 Use the compensation strategy to answer these:

a $5 \times 29 \longrightarrow 5 \times \square = \square - \square$

So, $5 \times 29 = \square$

b $3 \times 49 \longrightarrow 3 \times \square = \square - \square$

So, $3 \times 49 = \square$

c $4 \times 39 \longrightarrow 4 \times \square = \square - \square$

So, $4 \times 39 = \square$

2 Use the compensation strategy to answer these questions. This time you need to look for more than one extra group to subtract:

a $4 \times 18 \longrightarrow 4 \times \square = \square - \square$

So, $4 \times 18 = \square$

b $3 \times 17 \longrightarrow 3 \times \square = \square - \square$

So, $3 \times 17 = \square$

We have rounded up to 20. So instead of 4×18 we have 4×20 . This is 2 more groups of 4. So we subtract 8.



THINK

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When multiplying we can round to an easier number and then adjust.

Look how we do this with 4×29

29 is close to 30. We can do 4×30 in our heads because we know $4 \times 3 = 12$

$$4 \times 30 = 120$$

We have to take off 4 because we used one group of 4 too many: $120 - (1 \times 4) = 116$

$$4 \times 29 = 116$$

1 Use the compensation strategy to answer the questions. The first one has been done for you.

a $19 \times 3 = \underline{20} \times \underline{3} - \underline{3} = \boxed{57}$

b $8 \times 29 = \underline{\quad} \times \underline{\quad} - \underline{\quad} = \boxed{\quad}$

c $18 \times 6 = \underline{\quad} \times \underline{\quad} - \underline{\quad} = \boxed{\quad}$

d $7 \times 39 = \underline{\quad} \times \underline{\quad} - \underline{\quad} = \boxed{\quad}$

e $28 \times 5 = \underline{\quad} \times \underline{\quad} - \underline{\quad} = \boxed{\quad}$

We can also adjust up. Look how we do this with 6×62 :

62 is close to 60. We can do 6×60 in our heads because we know $6 \times 6 = 36$

$$6 \times 60 = 360$$

We have to then add 2 more lots of 6: $360 + 12 = 372$

$$6 \times 62 = 372$$

2 Use the compensation strategy and adjust up for these. The first one has been done for you.

a $41 \times 3 = \underline{40} \times \underline{3} + \underline{3} = \boxed{123}$

b $81 \times 4 = \underline{\quad} \times \underline{\quad} + \underline{\quad} = \boxed{\quad}$

c $22 \times 9 = \underline{\quad} \times \underline{\quad} + \underline{\quad} = \boxed{\quad}$

d $32 \times 9 = \underline{\quad} \times \underline{\quad} + \underline{\quad} = \boxed{\quad}$

e $7 \times 62 = \underline{\quad} \times \underline{\quad} + \underline{\quad} = \boxed{\quad}$

Would I use the compensation strategy with numbers such as 56 or 84? Why or why not?



THINK

Mental multiplication strategies – compensation strategy

3 In this activity you'll work alongside a partner. You'll each need two dice and your own copy of this page. For each line, roll the dice to find the tens digit and then roll it again to find the multiplier. Your partner will do the same. Use the compensation strategy to mentally work out the answers to the problems.



Tens	Units		Multiplier		Answer
<input type="text"/>	1	×	<input type="text"/>	=	<input type="text"/>
<input type="text"/>	9	×	<input type="text"/>	=	<input type="text"/>
<input type="text"/>	2	×	<input type="text"/>	=	<input type="text"/>
<input type="text"/>	1	×	<input type="text"/>	=	<input type="text"/>
<input type="text"/>	8	×	<input type="text"/>	=	<input type="text"/>
<input type="text"/>	1	×	<input type="text"/>	=	<input type="text"/>
<input type="text"/>	9	×	<input type="text"/>	=	<input type="text"/>
<input type="text"/>	8	×	<input type="text"/>	=	<input type="text"/>
<input type="text"/>	2	×	<input type="text"/>	=	<input type="text"/>
<input type="text"/>	1	×	<input type="text"/>	=	<input type="text"/>

- Check each other's calculations. You may want to use a calculator.
- Now, use the calculator to add your answers. The person with the highest score wins.