Addition	Subtraction
Multiplication	Division

7 + 5 = 12
addend addend sum

'adding the places'

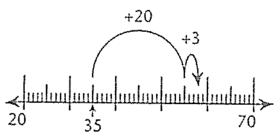
Start with one addend, then add the value of the digits of the other addend(s).

see

35 + 23 = __

think

35 + 20 + 3



'bridging to ten'

Start with one addend, count up to the next multiple of 10 (100, 1000, etc.), then add the balance of the second addend.

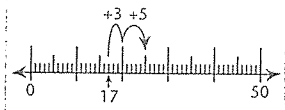
Synonyms: 'bridge the decades'; 'bridge to ten'; 'make a ten'; 'make to ten'; 'use ten'

see

17 + 8 = __

think

17 + 3 + 5



'compensating'

Round one or both addends before adding. Then adjust the answer to compensate for the rounding.

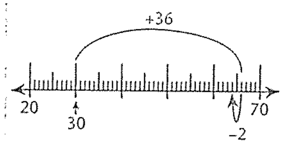
Synonyms: 'compensation'; 'round and adjust'; 'round or adjust'

see

28 + 36 = __

think

(30 + 36) − 2



'counting on'

Start with one addend, then count on parts (not places) of the other addend.

Synonym: 'jump'

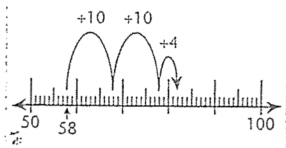
Sub-strategies: 'count-on-1'; 'count-on-2'; 'count-on-3'

see

58 + 24 = __

think

58 + 10 + 10 + 4



'using compatible addends'

Choose pairs of addends to make the calculation more manageable. This strategy applies only when there are three or more addends.

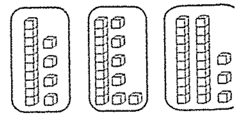
Synonym: 'use compatible pairs'

see

14 + 23 + 16 = __

think

14 + 16 + 23



'using doubles'

Use a known nearby 'double'.

Synonym: 'near doubles'

Sub-strategies: 'double-plus-1'; 'double-plus-2'

see

7 + 8 = __

think

7 + 8 = 15

because 7 + 7 = 14

'using place value'

Expand the addends into places before adding the value of the digits in each place.

Synonym: 'split'

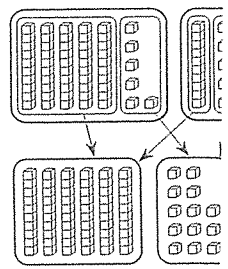
see

56 + 17 = __

think

50 + 10 + 6 + 7

or 6 + 7 + 50 + 10



ͻubtraction

12	–	7	=	5
minuend		subtrahend		difference

ˌadjusting'

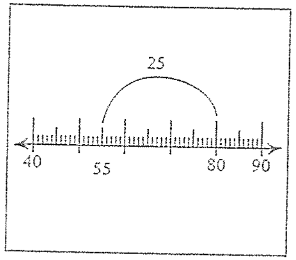
ꞔhange the minuend and
ɪe subtrahend in the same
ˀay to make the calculation
ɪore manageable.

see

83 – 58 = __

think

80 – 55
(subtract 3 from each)



ꞌridging to ten'

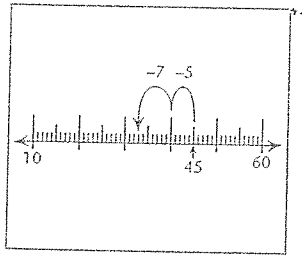
art with the minuend,
ɔunt back to the next
ːcade, then subtract the
ılance of the subtrahend.
ˈnonym: 'bridge the decades'

see

45 – 12 = __

think

45 – 5 – 7



ɔmpensating'

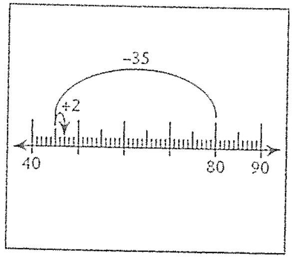
und the minuend or
ɔtrahend before subtracting.
en adjust the answer to
ːmpensate for the rounding.
ɔonyms: 'compensation';
und and adjust';
und or adjust'

see

82 – 35 = __

think

(80 – 35) + 2



unting back'

rt with the minuend, then
ınt back parts (not places)
ːhe subtrahend.
ıonym: 'jump'

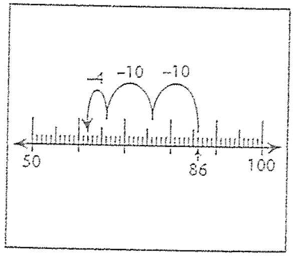
ɔ-strategies: 'count-back-1';
ınt-back-2'; 'count-back-3'

see

86 – 24 = __

think

86 – 10 – 10 – 4



Subtraction

'subtracting the places'

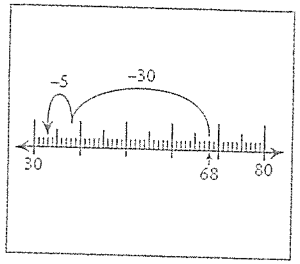
Start with the minuend then
subtract the value of the digits
in the subtrahend.

see

68 – 35 = __

think

68 – 30 – 5



'thinking addition'

Use addition facts to solve
a subtraction problem.

see

15 – 12 = __

think

12 + 3 *is* 15
so 15 – 12 *is* 3

'using place value'

Expand the minuend and
subtrahend and subtract the
value of the digits in each place.

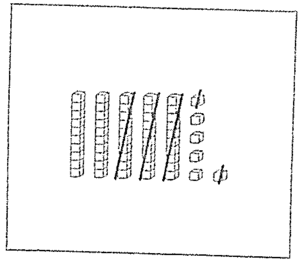
Synonym: 'split'

see

56 – 32 = __

think

(50 – 30) + (6 – 2)



Multiplication

3 × 4 = 12
multiplicand multiplier product
factors

'breaking a factor'

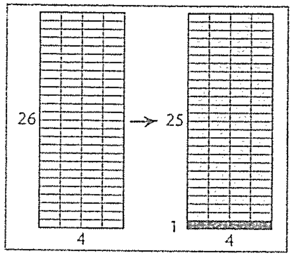
;plit one factor into manageable
›arts (not places) before
nultiplying each part and
.dding the partial products.

see

26 × 4 = __

think

(25 × 4) + (1 × 4)



building down'

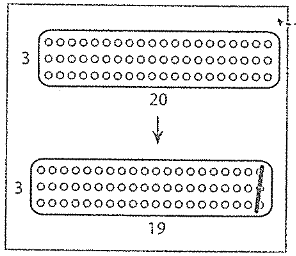
Jse a known fact that is greater
han the given fact to calculate
n unknown fact or
ts turnaround.

see

19 × 3 = __

think

19 × 3 *is* 57 *because*
20 × 3 *is* 60



›uilding up'

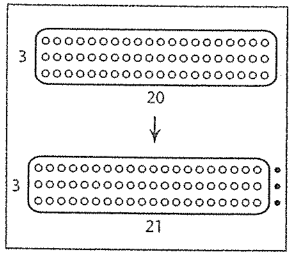
Jse a known fact that is
ɛss than the given fact to
alculate an unknown fact
ɾ its turnaround.

see

21 × 3 = __

think

21 × 3 *is* 63 *because*
20 × 3 *is* 60



ɩoubling'

)ouble or repeatedly double to
ıultiply by 2, 4, 8 or any power
ɾf 2.

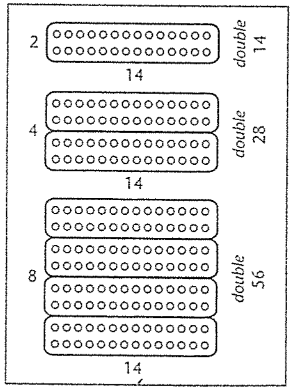
ub-strategies: 'double'; 'double-
ouble'; 'double-double-double'

see

8 × 14 = __

think

Double 14 *is* 28
Double 28 *is* 56
Double 56 *is* 112



Multiplication

'doubling and halving'

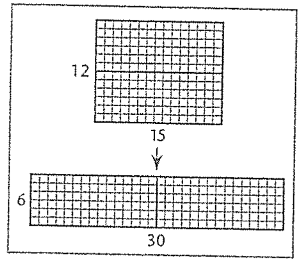
Double one factor and halve another to make an equivalent number sentence that is more manageable to calculate mentally. The process could require repeated doubling and halving. At least one factor needs to be even.

see

12 × 15 = __

think

6 × 30



'factorising'

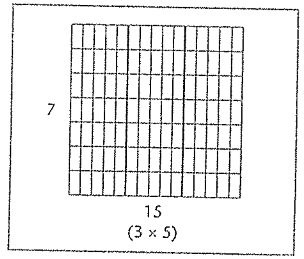
Break one (or more) factor(s) into two factors. All the factors are then considered.
The strategy of 'using compatible factors' is often applied at this stage.

see

15 × 7 = __

think

3 × 5 × 7 *or* 5 × 3 × 7



'recognising midpoints'

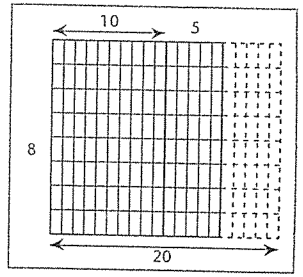
Identify one number as a midpoint between two known facts.

see

8 × 15 = __

think

8 × 15 *must be halfway*
between 8 × 10 (80)
and 8 × 20 (160)



Multiplication

'using a benchmark number'

Recognise that one of the factors is a unit fraction of a common benchmark such as 10, 100 or 1000.

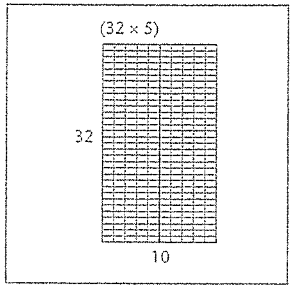
Synonym: 'use ten'

see

$32 \times 5 =$ __

think

32×10 *is* 320, *so* 32×5 *must be one half of* 320 (160)

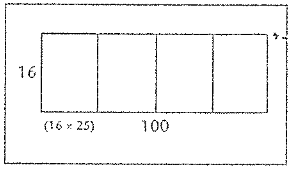


see

$16 \times 25 =$ __

think

16×100 *is* 1600, *so* 16×25 *must be one quarter of* 1600 (400)



'using compatible factors'

Choose pairs of factors to make the calculation more manageable. This strategy applies only when there are three or more factors.

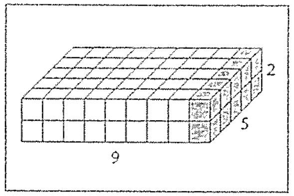
Synonym: 'use compatible pairs'

see

$2 \times 9 \times 5 =$ __

think

$(2 \times 5) \times 9$



'using division'

Divide when multiplying by a group fraction or percentage.

see

$\frac{1}{5} \times 30 =$ __

think

$30 \div 5$

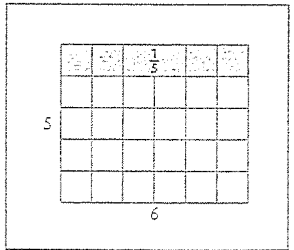
see

10% of 180

think

10% of 180 *is the same as* $\frac{1}{10}$ of 180

$\frac{1}{10}$ of 180 *is the same as* $180 \div 10$



Multiplication

'using place value'

Use the distributive property to multiply the places of one factor by each place of the other factor.

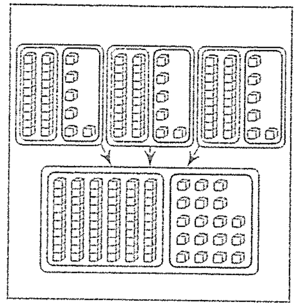
Synonym: 'multiply the parts'

see

$26 \times 3 =$ __

think

$(20 \times 3) + (6 \times 3)$



Division

12	÷	3	=	4
dividend		divisor		quotient

'adjusting'

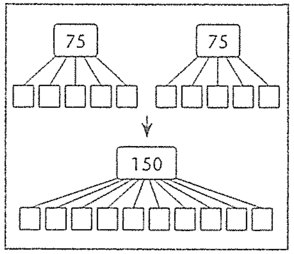
Change the dividend and divisor by multiplying each number by the same amount to make the calculations more manageable.

see

75 ÷ 5 = __

think

150 ÷ 10
(double each number)



'breaking the dividend'

Split the dividend into manageable parts (not places), before dividing each part and adding the quotients.

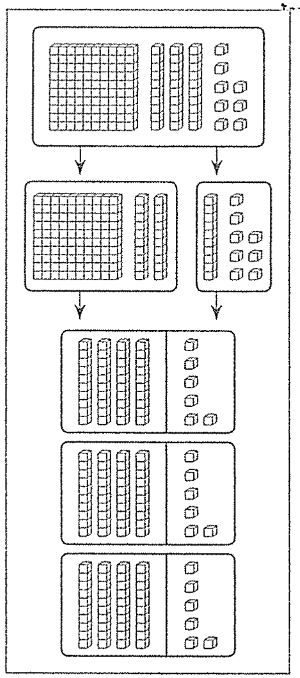
Synonyms: 'break up the dividend'; 'divide the parts'

see

138 ÷ 3 = __

think

(120 ÷ 3) + (18 ÷ 3)



Division

'halving'

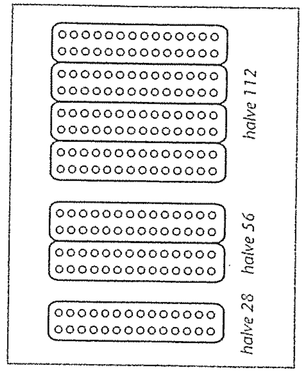
Halve or repeatedly halve to divide by 2, 4, 8 or any power of 2.

see

112 ÷ 8 = __

think

Half of 112 *is* 56
Half of 56 *is* 28
Half of 28 *is* 14



'thinking multiplication'

Use multiplication to solve a division problem.

see

35 ÷ 7 = __

think

7 × 5 *is* 35
so 35 ÷ 7 *is* 5

'using place value'

Expand the dividend into places (or a combination of places) before dividing each place and adding the quotients.

Synonym: 'expanding the dividend'

see

318 ÷ 3 = __

think

(300 ÷ 3) + (18 ÷ 3)