

How do you calculate on the soroban frame?

Remember there is one bead above the horizontal line and four below.

Addition: Draw beads to represent the first number then add beads to represent the number to be added.

Subtraction: Draw beads to represent the first number then, to subtract, strike through the beads representing the number to be subtracted.

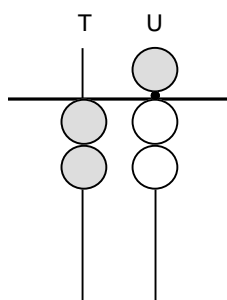
It is important to plan exercises carefully in advance. Soroban can give pupils useful practice in working with number bonds 5 and 10 but it is best to ensure they are competent with basic calculations before moving on. Examples of different procedures are given here.

Straightforward calculation

A) $25+2=27$

1. +25

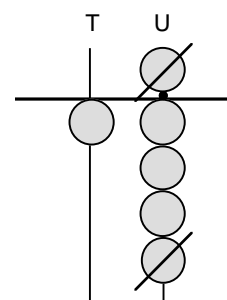
2. +2



S) $19-6=13$

1. +19

2. -6



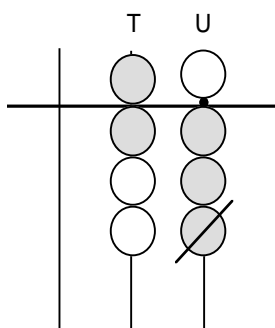
Calculation involving knowledge of number bond 5

A) $63+24=87$

1. +63

2. +20

3. +4 i.e.(+5-1)

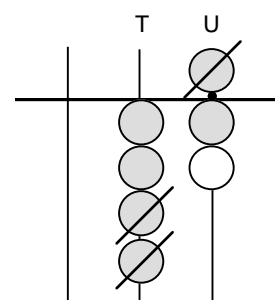


S) $46-24=22$

1. +46

2. -20

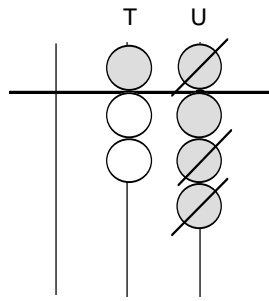
3. -4 i.e.(-5+1)



Calculation involving knowledge of number bond 10

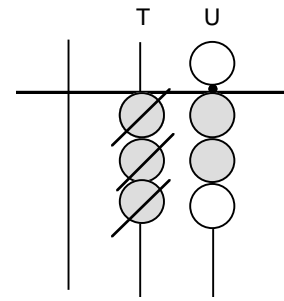
A) $58+13=71$

1. +58
2. +10
3. +3 i.e.(+10-7)



S) $32-24=8$

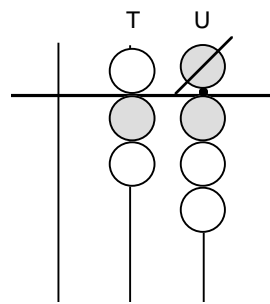
1. +32
2. -20
3. -4 i.e.(-10+6)



Calculation involving knowledge of both number bond 5 and 10

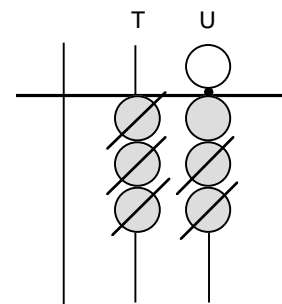
A) $16+57=73$

1. +16
2. +50
3. +7 i.e.(+10-3)
where $-3=(-5+2)$



S) $33-27=6$

1. +33
2. -20
3. -7 i.e.(-10+3)
where $+3=(+5-2)$



Addition on the soroban frame

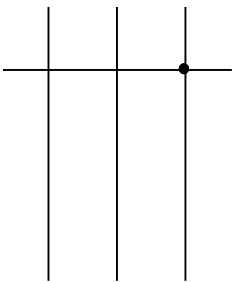
Remember there is one bead above the horizontal line and four below.

Find the answer to the following exercises by using the soroban frame. This sheet includes simple calculations (1, 2), practice with number bond 5 (3, 4), practice with number bond 10 (5 to 7), and practice with both number bonds 5 and 10 (8,9).

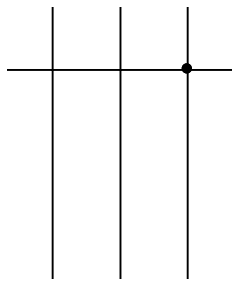
Draw beads to represent the first number then add beads to represent the number to be added. To take off beads, cross them out, don't use a rubber.

Number 6 to 9 are expressed as: $6=5$ plus 1, $7=5$ plus 2, $8=5$ plus 3, and $9=5$ plus 4.

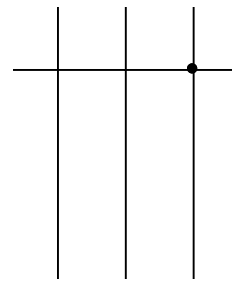
1) $52+36=$



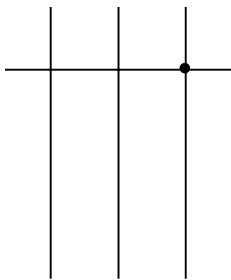
2) $123+506=$



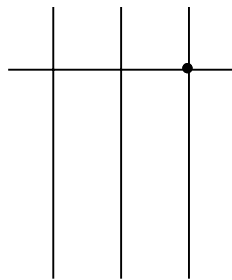
3) $63+24=$



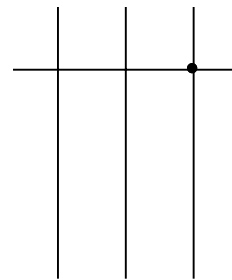
4) $34+140=$



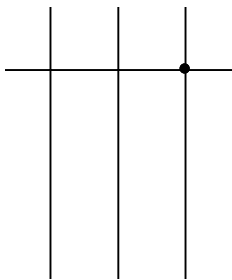
5) $354+28=$



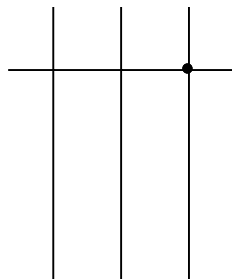
6) $180+52=$



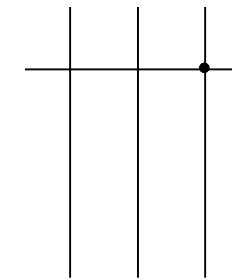
7) $106+28=$



8) $52+84=$



9) $126+418=$



Addition & Subtraction on the soroban frame

Remember there is one bead above the horizontal line and four below.

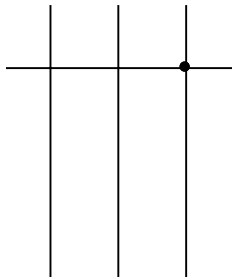
Find the answer to the following exercises by using the soroban frame.

To take off beads, cross them out strike it through. Don't use a rubber.

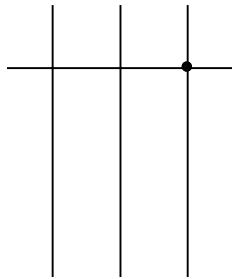
Numbers 6 to 9 are expressed as: $6=5$ plus 1, $7=5$ plus 2, $8=5$ plus 3, and $9=5$ plus 4.

Nb. Exercises include practise of number bond 5, 10 and both 5 and 10.

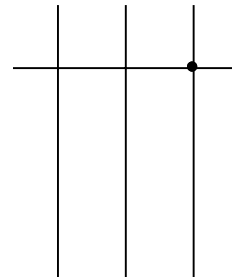
1) $152+27=$



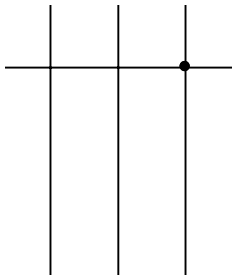
2) $389-128=$



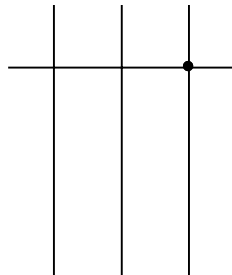
3) $23+42=$



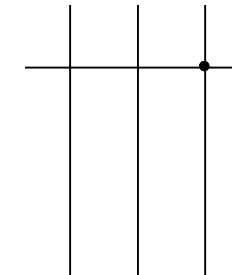
4) $56-14=$



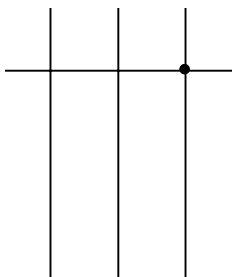
5) $172+56=$



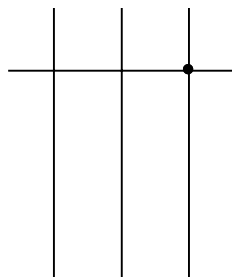
6) $263-59=$



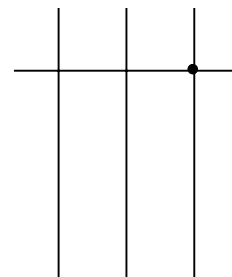
7) $106-67=$



8) $152+85=$



9) $126-74=$



Exercises for Key Stages 1, 2 and 3

Once you have explained how to calculate on the soroban frame, you can choose the appropriate exercises according to their ability.

Students can draw their answers on a sheet of soroban frames.

Three sets of questions are given. In each case:

Step 1 is simple addition on each column

Step 2 uses number bond 5

Step 3 uses number bond 10

Step 4 uses number bonds 5 and 10

No. 1	Key Stage 1	Key Stage 2	Key Stage 3
Step 1	1) $21+3=$	1) $21+53=$	1) $132+67=$
	2) $43-12=$	2) $328-206=$	2) $3859-1356=$
Step 2	3) $24+3=$	3) $215+42=$	3) $142+34=$
	4) $16-4=$	4) $67-43=$	4) $537-214=$
Step 3	5) $28+5=$	5) $83+9=$	5) $36+55=$
	6) $25-6=$	6) $82-55=$	6) $143-54=$
Step 4	7) $37+6=$	7) $36+57=$	7) $265+576=$
	8) $23-8=$	8) $73-56=$	8) $624-568=$
No. 2			
Step 1	1) $38+50=$	1) $23+55=$	1) $102+356=$
	2) $48-6=$	2) $49-25=$	2) $333-102=$
Step 2	3) $42+30=$	3) $320+426=$	3) $341+434=$
	4) $26-2=$	4) $68-34=$	4) $546-444=$
Step 3	5) $72+9=$	5) $38+59=$	5) $327+558=$
	6) $83-5=$	6) $84-55=$	6) $432-295=$
Step 4	7) $27+6=$	7) $26+18=$	7) $163+74=$
	8) $42-7=$	8) $32-6=$	8) $231-68=$

No. 3			
Step 1	1) $21+60=$	1) $66+23=$	1) $183+605=$
	2) $43-20=$	2) $84-52=$	2) $296-151=$
Step 2	3) $13+40=$	3) $32+43=$	3) $321+431=$
	4) $63-41=$	4) $76-34=$	4) $556-432=$
Step 3	5) $24+8=$	5) $58+37=$	5) $284+957=$
	6) $42-5=$	6) $42-28=$	6) $345-156=$
Step 4	7) $16+7=$	7) $65+76=$	7) $546+760=$
	8) $23-6=$	8) $34-18=$	8) $323-168=$

Soroban Worksheet

