

Directed numbers

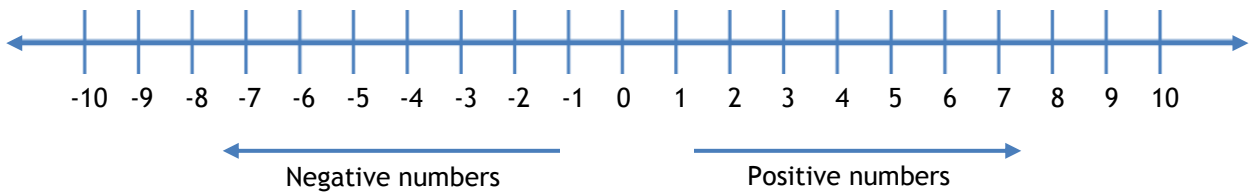
Work out the answers to the following questions and write them in your book. The number line at the top of the page may help you with your answers.

Exercise 1: Write down the number that is bigger

1	3 or 8	2	-2 or 3	3	2 or -1	4	7 or -3
5	-6 or 4	6	3 or -7	7	8 or 5	8	-3 or 6
9	-4 or -1	10	-7 or -4	11	-3 or 6	12	-7 or -2
13	-8 or 2	14	9 or -4	15	7 or -9	16	-9 or -3
17	3 or 19	18	3 or -19	19	-7 or -10	20	6 or -18

Exercise 2: Work out the following and write answer in your book

1	$4 - 2$	2	$3 - 5$	3	$5 - 6$	4	$2 - 4$
5	$7 - 9$	6	$5 - 9$	7	$1 - 7$	8	$9 - 12$
9	$0 - 5$	10	$0 - 8$	11	$-1 - 3$	12	$-3 - 2$
13	$-2 - 6$	14	$-6 - 8$	15	$-7 - 5$	16	$-9 - 6$
17	$3 + 2$	18	$5 + 3$	19	$6 + 7$	20	$0 + 7$
21	$-1 + 3$	22	$4 + 7$	23	$-5 + 9$	24	$-7 + 17$
25	$-5 + 5$	26	$-5 + 4$	27	$-3 + 2$	28	$-6 + 3$
29	$-9 + 3$	30	$-3 + 9$	31	$-8 + 7$	32	$-12 + 1$
33	$-10 + 5$	34	$-10 - 4$	35	$-10 + 4$	26	$3 - 7$
37	$-8 - 9$	38	$-6 + 13$	39	$23 - 24$	40	$-20 - 20$



When two signs are together

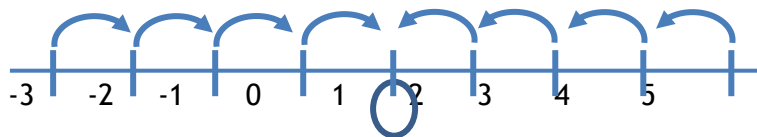
$++ = +$	$+- = -$	$-+ = -$	$-- = +$
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Exercise 3: Answer these in your books. The above may help you.

1	$+4 + +2$	2	$+2 + +6$	3	$+7 - +2$	4	$+5 - +4$
5	$+5 - +9$	6	$0 - +7$	7	$+5 - +8$	8	$+9 - +12$
9	$0 + +5$	10	$0 - +8$	11	$+1 + +3$	12	$+3 - +12$
13	$-5 + +6$	14	$-1 + +8$	15	$-2 + +5$	16	$-9 + +12$
17	$-1 + -2$	18	$-1 + +5$	19	$-2 - +7$	20	$0 - +7$
21	$-7 - +4$	22	$-9 - +3$	23	$-2 - +7$	24	$-2 - +10$

Exercise 4: What number is half way between . . .

e.g What is halfway between 3 and 5?



Answer = 1

1	7 and 1	2	10 and 2	3	5 and -1	4	3 and -9
5	-6 and -2	6	5 and -9	7	-1 and -13	8	-6 and -10
9	-6 and -20	10	7 and -19	11	-3 and -31	12	14 and -6
13	0 and -8	14	-7 and -21	15	12 and 42	16	7 and -25
17	43 and -3	18	2 and -34	19	-2 and -18	20	-11 and -3

Directed numbers - Worded questions

1. The temperature is -2°C . If it rises by 8°C what is the new temperature?
2. At midnight the temperature was -6°C . At midday it was 9°C . By how much did the temperature rise between these two times?
3. Fiona is in debt to her bank. She owes them £60. She gets £85 for her birthday and pays this in to her bank. How much does she have now?
4. A deep sea diver is at a depth of 75 metres below the surface. He rises 40 metres. At what depth is he now?
5. The temperature today is 6°C . It is due to drop by 12°C . What will the temperature be then?
6. What temperature is 18°C warmer than -13°C ?
7. What temperature is 12°C colder than -3°C .
8. What temperature is 23°C warmer than -7°C ?
9. What temperature is 16°C colder than 9°C ?
10. A submarine can launch a missile straight up to hit a plane. It is at a depth of 60m below the surface and the plane passes by straight above at 340m. How far would the missile have to travel to hit the plane?
11. The plane can drop depth charges to counter submarine missiles. If a plane drops a charge set for 45m below the surface from a height of 280m, how far has the depth charge travelled before it is detonated?
12. A freezer runs at a temperature of -18°C . It breaks down and its temperature rises by 5°C . What is the temperature of the freezer now?
13. I have £37 in my bank account and write a cheque for £62. After the cheque has been cashed what will the bank balance show now?
14. At first thing the temperature was -2°C . By midday it had risen by 11°C , but by night it had dropped by 7°C . What is the temperature now?
15. Jonny has £40 in his bank account. He decide to spend £70 at a shop but receives a cashback bonus of £25 from previous buys. Is he in debt?

Multiplication and division

When multiplying and dividing

+ + = +

+ - = -

- + = -

- - = +

e.g. $+6 \times -3 = -18$

e.g. $(-4)^2 = -4 \times -4 = 16$

e.g. $24 \div -3 = -8$

Exercise 5: Work out the answers to these multiplications

1	$(+2) \times (-5)$	2	$(+3) \times (-7)$	3	$(-6) \times (5)$	4	$(-9) \times 4$
5	$(-3) \times (-2)$	6	$(-5) \times (-1)$	7	$(-8) \times (-9)$	8	$0 \times (-7)$
9	6×0	10	$(-6) \times 3$	11	$5 \times (-6)$	12	$(-7) \times (-7)$
13	$(-3)^2$	14	$(-5)^2$	15	$(-8) \times (-6)$	16	$(+2) \times (+6)$
17	$0 \times (-2)$	18	$(-5) \times 4$	19	$6 \times (-3)$	20	$7 \times (-4)$
21	$(-2) \times (-3) \times 4$	22	$5 \times (-2) \times 3$	23	$(-2)^3$	24	$(-2)^4$

Exercise 6: Work out the answers to these division calculations

1	$(-8) \div 2$	2	$(-10) \div 5$	3	$(-6) \div (+3)$	4	$8 \div (-4)$
5	$16 \div (-8)$	6	$27 \div (-9)$	7	$42 \div (-7)$	8	$48 \div (-8)$
9	$(-24) \div (-3)$	10	$20 \div (-4)$	11	$-27 \div (-3)$	12	$28 \div (-4)$
13	$36 \div 3$	14	$(-63) \div 9$	15	$28 \div (-7)$	16	$-36 \div 3$
17	$(-12) \div 3$	18	$(-33) \div 11$	19	$(-100) \div 4$	20	$(+45) \div (-9)$
21	$(-12) \div (4 + 2)$	22	$(-18) \div (4 + 2)$	23	$(-8) \div (-1 - 1)$	24	$15 \div (1 - 4)$

Answers:**Exercise 1:**

1. 8 2. 3 3. 2 4. 7 5. 4 6. 3 7. 8 8. 6 9. -1 10. -4
 11. 6 12. -2 13. 2 14. 9 15. 7 16. -3 17. 19 18. 3 19. -7 20. 6

Exercise 2:

1. 2 2. -2 3. -1 4. -2 5. -2 6. -4 7. -6 8. -3 9. -5 10. -3
 11. -4 12. -5 13. -8 14. -14 15. -12 16. -15 17. 5 18. 8 19. 13 20. 7
 21. 2 22. 11 23. 4 24. 10 25. 0 26. -1 27. -1 28. -3 29. -6 30. 6
 31. -1 32. 11 33. -5 34. -14 35. -6 36. -4 37. -17 38. 7 39. -1 40. -40

Exercise 3:

1. +6 2. +8 3. +5 4. +1 5. -4 6. -7 7. -3 8. -3 9. +5 10. -8 11. +4 12. -9
 13. +1 14. +7 15. +3 16. +3 17. -3 18. +4 19. -9 20. -7 21. -11 22. -12 23. -9 24. -12

Exercise 4:

1. 4 2. 6 3. 2 4. -3 5. -4 6. -2 7. -7 8. -8 9. -13 10. -6
 11. -17 12. 4 13. -4 14. -14 15. 27 16. -9 17. 20 18. -16 19. -10 20. -7

Directed numbers (Worded questions):

1. 6°C 2. 15°C 3. £25 4. -35 metres 5. -6°C 6. 5°C 7. -15°C 8. 16°C 9. -7°C
 10. 400m 11. 325 metres 12. -13°C 13. -£25 14. 2°C 15. Yes by £5

Exercise 5:

1. -10 2. -21 3. -30 4. -36 5. 6 6. 5
 7. 72 8. 0 9. 0 10. -18 11. -30 12. 49
 13. 9 14. 25 15. 48 16. 12 17. 0 18. -20
 19. -18 20. -28 21. 24 22. -30 23. -8 24. 16

Exercise 6:

1. -4 2. -2 3. -2 4. -2 5. -2 6. -3
 7. -6 8. -6 9. 8 10. -5 11. 9 12. -7
 13. 12 14. -7 15. -4 16. -12 17. -4 18. -3
 19. -25 20. -5 21. -2 22. -3 23. 4 24. -5