18. $35\div(3+4)\times3-(4\times3)\div4\times(6-2)$ = _____

19. $18\times(2+6\div2)\div30+15\div(1+4)-4$ = _____

20. $4\times\left[(11+7)\div3\right]-15\div(7-2)+6\times(5-3)+11$ = _____

Practice Section C

Calculate the answer to each of the following questions by performing the correct order of operations.

1. $(27\div3)\times(24\div8)\times(16\div8)-7\times(26\div2-13)$ = _____

2. $5\times(7-2+3)\div8-2\times(21-20)+8\times(6-2)$ = _____

3. $2\times\left[5\times(7-2+3)\div8\right]\times(18+2\times3-20)+8\times(6-2)$ = _____

4. $42\div(7\times3)\times(6-2)+\left[44\div(35-13)\right]+9\div(2+1)$ = _____

5. $\left[2\times(4+11)\right]\times6-12\times\left[5+(3\times9-7)\times2-40\right]-(6+7)\times2$ = _____

Practice Section D

In this section, solutions for the practice questions contain commonly-made errors. For each question, circle the error(s) and give a correct solution.

1.

$$36\div(3\times4)+(2\times3)-16\times3+50$$
$$=12\times4+(2\times3)-16\times3+50$$
$$=48+6-16\times3+50$$
$$=54+48+50$$
$$=152$$

2.

$$21\times(4+9)\div13+60\div(6-1)+7\times(4-2)$$
$$=21\times13\div13+60\div(6-1)+7\times(4-2)$$
$$=21\times13\div13+60\div5+7\times(4-2)$$
$$=21\times13\div13+60\div12\times(4-2)$$
$$=21\times13\div13+60\div12\times3$$
$$=273\div13+60\div12\times3$$
$$=21+60\div12\times3$$
$$=21+5\times3$$
$$=78$$

Practice Section E

Challenge Question. If you can do this one, then you get an A^{+}. ☺

Calculate the answer by performing the correct order of operations.

$$10\times\left[5+(7\times2-4)\times6-30\right]+(3+7)\times2-\left[4\times(3+12)\right]\times6+\left[(15\div3)\times20\div(10\div5)+8\right]$$

$=$ _____

SOLUTIONS

Set B

Order of Operations 2

ORDER OF OPERATIONS 2

Practice Section A

1. Solution:
$(9+6)-2$
$=15-2$
$=13$

2. Solution:
$8\div(2+6)$
$=8\div8$
$=1$

3. Solution:
$16\div(2+6)$
$=16\div8$
$=2$

4. Solution:
$(18-6)\div3$
$=12\div3$
$=4$

5. Solution:
$(14-6)\times2$
$=8\times2$
$=16$

6. Solution:
$(13+5)\div2$
$=18\div2$
$=9$

7. Solution:
$(5-2)+(6+2)$
$=3+8$
$=11$

8. Solution:
$6\times(4-2)$
$=6\times2$
$=12$

9. Solution:
$15\div(3+2)$
$=15\div5$
$=3$

10. Solution:
$15\div(15\div3)$
$=15\div5$
$=3$

11. Solution:
$18+6\div(2+4)$
$=18+6\div6$
$=18+1$
$=19$

12. Solution:
$21\div(5-2)+7$
$=21\div3+7$
$=7+7$
$=14$

13. Solution:

$$(4+8)\div 2-6$$
$$=12\div 2-6$$
$$=6-6$$
$$=0$$

14. Solution:

$$2\times(7-2)+3$$
$$=2\times 5+3$$
$$=10+3$$
$$=13$$

15. Solution:

$$(4+8)\div(6-2)$$
$$=12\div(6-2)$$
$$=12\div 4$$
$$=3$$

Practice Section B

1. Solution:

$$20\div 4-(5-2)$$
$$=5-(5-2)$$
$$=5-3$$
$$=2$$

2. Solution:

$$24\div(24\div 12)+4$$
$$=24\div 2+4$$
$$=12+4$$
$$=16$$

3. Solution:

$$3\times 6+(7-2)+3$$
$$=18+5+3$$
$$=23+3$$
$$=26$$

4. Solution:

$$(4\times 2)+(12\div 3)$$
$$=8+4$$
$$=12$$

5. Solution:

$$18\div6\times(18-9\div3)$$
$$=3\times(18-9\div3)$$
$$=3\times(18-3)$$
$$=3\times15$$
$$=45$$

6. Solution:

$$(12\div2)+(4\times3)-13$$
$$=6+(4\times3)-13$$
$$=6+12-13$$
$$=18-13$$
$$=5$$

7. Solution:

$$(14+3)-(10-2)\div4$$
$$=17-(10-2)\div4$$
$$=17-8\div4$$
$$=17-2$$
$$=15$$

8. Solution:

$$(12\div2)+(4\times3)-13$$
$$=6+(4\times3)-13$$
$$=6+12-13$$
$$=18-13$$
$$=5$$

9. Solution:

$$(5+7)\div2\div(8\div4)$$
$$=12\div2\div(8\div4)$$
$$=6\div(8\div4)$$
$$=6\div2$$
$$=3$$

10. Solution:

$$(32-14)\div(4+5)\div4$$
$$=18\div(4+5)\div4$$
$$=18\div9\div4$$
$$=\frac{1}{2}$$

11. Solution:

$$1+(9\times5)-12+(13-4)$$
$$=1+45-12+(13-4)$$
$$=1+45-12+9$$
$$=43$$

12. Solution:

$$25\div(2+3)-(3+5)+6$$
$$=25\div5-(3+5)+6$$
$$=5-(3+5)+6$$
$$=5-8+6$$
$$=3$$

13. Solution:

$$(15\div3)\times20\div(10\div5)+8$$
$$=5\times20\div(10\div5)+8$$
$$=100\div(10\div5)+8$$
$$=100\div2+8$$
$$=50+8$$
$$=58$$

14. Solution:

$$(12+14)\div(15\div3+8)+33$$
$$=26\div(15\div3+8)+33$$
$$=26\div(5+8)+33$$
$$=26\div13+33$$
$$=2+33$$
$$=35$$

15. Solution:

$$36\div(3\times4)+(2\times3)+16\times3-2$$
$$=36\div12+(2\times3)+16\times3-2$$
$$=36\div12+6+16\times3-2$$
$$=3+6+16\times3-2$$
$$=3+6+48-2$$
$$=9+48-2$$
$$=57-2$$
$$=55$$

16. Solution:

$$22\div(14\div7)+(5\times2)-3\times(4-1)$$
$$=22\div2+(5\times2)-3\times(4-1)$$
$$=22\div2+10-3\times(4-1)$$
$$=22\div2+10-3\times3$$
$$=11+10-3\times3$$
$$=11+10-9$$
$$=21-9$$
$$=12$$

17. Solution:

$$36-(3\times4)\div(2\times3)+2\times(5-2)$$
$$=36-12\div(2\times3)+2\times(5-2)$$
$$=36-12\div6+2\times(5-2)$$
$$=36-12\div6+2\times3$$
$$=36-2+2\times3$$
$$=36-2+6$$
$$=34+6$$
$$=40$$

18. Solution:

$$35\div(3+4)\times3-(4\times3)\div4\times(6-2)$$
$$=35\div7\times3-(4\times3)\div4\times(6-2)$$
$$=35\div7\times3-12\div4\times(6-2)$$
$$=35\div7\times3-12\div4\times4$$
$$=5\times3-12\div4\times4$$
$$=15-3\times4$$
$$=15-12$$
$$=3$$

19. Solution:

$$18\times(2+6\div2)\div30+15\div(1+4)-4$$
$$=18\times(2+3)\div30+15\div(1+4)-4$$
$$=18\times5\div30+15\div(1+4)-4$$
$$=18\times5\div30+15\div5-4$$
$$=90\div30+15\div5-4$$
$$=3+15\div5-4$$
$$=3+3-4$$
$$=6-4$$
$$=2$$

20. Solution:

$$4\times\left[(11+7)\div3\right]-15\div(7-2)+6\times(5-3)+11$$
$$=4\times\left[18\div3\right]-15\div(7-2)+6\times(5-3)+11$$
$$=4\times6-15\div(7-2)+6\times(5-3)+11$$
$$=4\times6-15\div5+6\times(5-3)+11$$
$$=4\times6-15\div5+6\times2+11$$
$$=24-15\div5+6\times2+11$$
$$=24-3+6\times2+11$$
$$=24-3+12+11$$
$$=21+12+11$$
$$=33+11$$
$$=44$$

Practice Section C

1. Solution:

$$(27\div3)\times(24\div8)\times(16\div8)-7\times(26\div2-13)$$
$$=9\times(24\div8)\times(16\div8)-7\times(26\div2-13)$$
$$=9\times3\times(16\div8)-7\times(26\div2-13)$$
$$=9\times3\times2-7\times(26\div2-13)$$
$$=9\times3\times2-7\times(13-13)$$
$$=9\times3\times2-7\times0$$
$$=9\times3\times2-0$$
$$=27\times2$$
$$=54$$

2. Solution:

$$5\times(7-2+3)\div8-2\times(21-20)+8\times(6-2)$$
$$=5\times(5+3)\div8-2\times(21-20)+8\times(6-2)$$
$$=5\times8\div8-2\times(21-20)+8\times(6-2)$$
$$=5\times8\div8-2\times1+8\times(6-2)$$
$$=5\times8\div8-2\times1+8\times4$$
$$=40\div8-2\times1+8\times4$$
$$=5-2\times1+8\times4$$
$$=5-2+8\times4$$
$$=5-2+12$$
$$=3+12$$
$$=15$$

3. Solution:

$$2\times\left[5\times(7-2+3)\div8\right]\times(18+2\times3-20)+8\times(6-2)$$
$$=2\times\left[5\times(8)\div8\right]\times(18+2\times3-20)+8\times(6-2)$$
$$=2\times\left[40\div8\right]\times(18+2\times3-20)+8\times(6-2)$$
$$=2\times5\times(18+2\times3-20)+8\times(6-2)$$
$$=2\times5\times(18+6-20)+8\times(6-2)$$
$$=2\times5\times4+8\times(6-2)$$
$$=2\times5\times4+8\times4$$
$$=10\times4+8\times4$$
$$=40+8\times4$$
$$=40+32$$
$$=72$$

4. Solution:

$$42\div(7\times3)\times(6-2)+\left[44\div(35-13)\right]+9\div(2+1)$$
$$=42\div(7\times3)\times(6-2)+\left[44\div22\right]+9\div(2+1)$$
$$=42\div21\times(6-2)+\left[44\div22\right]+9\div(2+1)$$
$$=42\div21\times4+\left[44\div22\right]+9\div(2+1)$$
$$=42\div21\times4+2+9\div(2+1)$$
$$=42\div21\times4+2+9\div3$$
$$=2\times4+2+9\div3$$
$$=8+2+9\div3$$
$$=8+2+3$$
$$=13$$

5. Solution:

$$\left[2\times(4+11)\right]\times6-12\times\left[5+(3\times9-7)\times2-40\right]-(6+7)\times2$$
$$=\left[2\times15\right]\times6-12\times\left[5+(3\times9-7)\times2-40\right]-(6+7)\times2$$
$$=\left[2\times15\right]\times6-12\times\left[5+(27-7)\times2-40\right]-(6+7)\times2$$
$$=\left[2\times15\right]\times6-12\times\left[5+20\times2-40\right]-(6+7)\times2$$
$$=\left[2\times15\right]\times6-12\times\left[5+40-40\right]-(6+7)\times2$$
$$=30\times6-12\times\left[5+40-40\right]-(6+7)\times2$$
$$=30\times6-12\times5-(6+7)\times2$$
$$=30\times6-12\times5-13\times2$$
$$=180-12\times5-13\times2$$
$$=180-60-13\times2$$
$$=180-60-26$$
$$=120-26$$
$$=94$$

Practice Section D

1. Solution:

There is an error in line 1 when $36\div3$ is calculated before 3×4. A second error is made in the last line when $54+48+50=152$ appears instead of $54-48+50=56$.

The correct solution is:

$$36\div(3\times4)+(2\times3)-16\times3+50$$
$$=36\div12+(2\times3)-16\times3+50$$
$$=36\div12+6-16\times3+50$$
$$=3+6-16\times3+50$$
$$=3+6-48+50$$
$$=9-48+50$$
$$=11$$

2. Solution:
The incorrect order of operations is performed line 4 since $5+7$ is calculated before $15\div5$. There is arithmetic error in line 5 when $4-2=3$ instead of $4-2=2$. The last error is in line 8 when the incorrect order of operations is performed as 21 + 5 is calculated before 5×3.

The correct solution is:

$$
\begin{aligned}
&21\times(4+9)\div13+60\div(6-1)+7\times(4-2)\\
&=21\times13\div13+60\div(6-1)+7\times(4-2)\\
&=21\times13\div13+60\div5+7\times(4-2)\\
&=21\times13\div13+60\div5+7\times2\\
&=21\times13\div13+60\div5+14\\
&=273\div13+60\div5+14\\
&=21+60\div5+14\\
&=21+12+14\\
&=47
\end{aligned}
$$

Practice Section E

Solution:

$$10\times\left[5+\left(7\times2-4\right)\times6-30\right]+\left(3+7\right)\times2-\left[4\times\left(3+12\right)\right]\times6+\left[\left(15\div3\right)\times20\div\left(10\div5\right)+8\right]$$
$$=10\times\left[5+\left(14-4\right)\times6-30\right]+\left(3+7\right)\times2-\left[4\times\left(3+12\right)\right]\times6+\left[\left(15\div3\right)\times20\div\left(10\div5\right)+8\right]$$
$$=10\times\left[5+10\times6-30\right]+\left(3+7\right)\times2-\left[4\times\left(3+12\right)\right]\times6+\left[\left(15\div3\right)\times20\div\left(10\div5\right)+8\right]$$
$$=10\times\left[5+10\times6-30\right]+\left(3+7\right)\times2-\left[4\times15\right]\times6+\left[\left(15\div3\right)\times20\div\left(10\div5\right)+8\right]$$
$$=10\times\left[5+10\times6-30\right]+\left(3+7\right)\times2-\left[4\times15\right]\times6+\left[5\times20\div\left(10\div5\right)+8\right]$$
$$=10\times\left[5+10\times6-30\right]+\left(3+7\right)\times2-\left[4\times15\right]\times6+\left[5\times20\div2+8\right]$$
$$=10\times\left[5+10\times6-30\right]+\left(3+7\right)\times2-\left[4\times15\right]\times6+\left[100\div2+8\right]$$
$$=10\times\left[5+10\times6-30\right]+\left(3+7\right)\times2-\left[4\times15\right]\times6+\left[50+8\right]$$
$$=10\times\left[5+10\times6-30\right]+\left(3+7\right)\times2-\left[4\times15\right]\times6+58$$
$$=10\times\left[5+60-30\right]+\left(3+7\right)\times2-\left[4\times15\right]\times6+58$$
$$=10\times35+\left(3+7\right)\times2-\left[4\times15\right]\times6+58$$
$$=10\times35+10\times2-\left[4\times15\right]\times6+58$$
$$=10\times35+10\times2-60\times6+58$$
$$=350+10\times2-60\times6+58$$
$$=350+20-60\times6+58$$
$$=350+20-360+58$$
$$=370-360+58$$
$$=10+58$$
$$=68$$