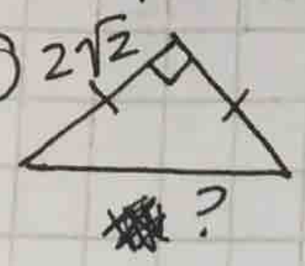
1.4 Special Right △s

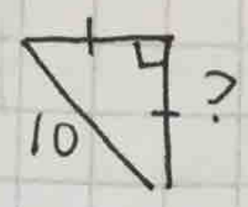
30	60	90
x	$x\sqrt{3}$	$2x$

45	45	90
x	x	$x\sqrt{2}$

① 

45	45	90
x	x	$x\sqrt{2}$
$2\sqrt{2}$		?

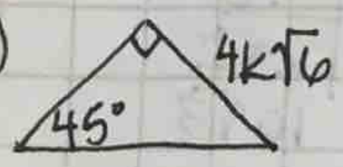
$2\sqrt{2}\cdot\sqrt{2} = 2\cdot 2 = \boxed{4}$

② 

45	45	90
x	x	$x\sqrt{2}$
?		10

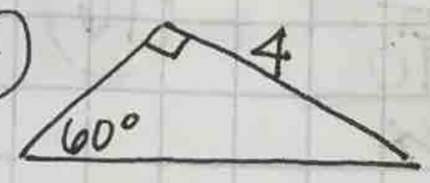
$\frac{x\sqrt{2}}{\sqrt{2}} = \frac{10}{\sqrt{2}}$

$x = \boxed{\frac{10}{\sqrt{2}}}$

③ 

45	45	90
x	x	$x\sqrt{2}$
$4k\sqrt{6}$		?

$4k\sqrt{6}\cdot\sqrt{2} = 4k\sqrt{12} = \boxed{8k\sqrt{3}}$

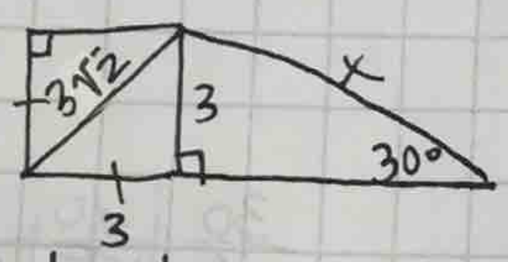
④ 

SR	ST	RT
30	60	90
x	$x\sqrt{3}$	$2x$
	4	

$\frac{x\sqrt{3}}{\sqrt{3}} = \frac{4}{\sqrt{3}}$

$2x = 2\left(\frac{4}{\sqrt{3}}\right)$

$\boxed{SR = \frac{4}{\sqrt{3}} \quad RT = \frac{8}{\sqrt{3}}}$

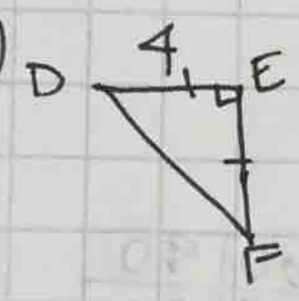
⑤ 

$\boxed{6}$

45	45	90
x	x	$x\sqrt{2}$
		$3\sqrt{2}$

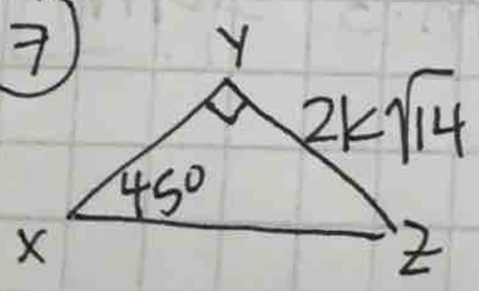
30	60	90
x	$x\sqrt{3}$	$2x$
3		$2\cdot 3$

$x = 3$

⑥ 

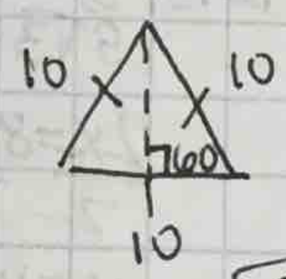
45	45	90
x	x	$x\sqrt{2}$
4		

$\boxed{4\sqrt{2}}$

⑦ 

45	45	90
x	x	$x\sqrt{2}$
$2k\sqrt{14}$		$\boxed{2k\sqrt{14}}$

$XZ: 2k\sqrt{14}\cdot\sqrt{2} = 2k\sqrt{28} = 4k\sqrt{7}$

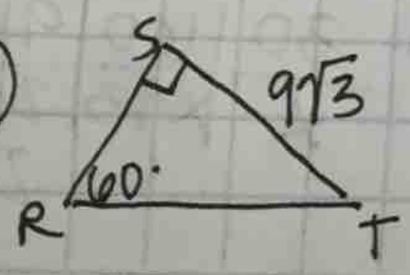
⑧ 

$\frac{30}{3} = 10$

30	60	90
x	$x\sqrt{3}$	$2x$
5		10

$2x = 10$
$x = 5$

$\boxed{5\sqrt{3}}$

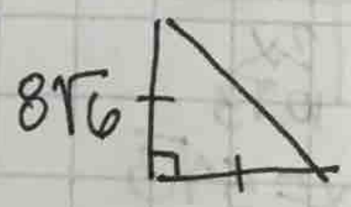
⑨ 

SR		RT
30	60	90
x	$x\sqrt{3}$	$2x$
	$9\sqrt{3}$	

$x = 9$

$\boxed{SR = 9 \quad RT = 18}$

⑩ isosceles = 2 sides equal

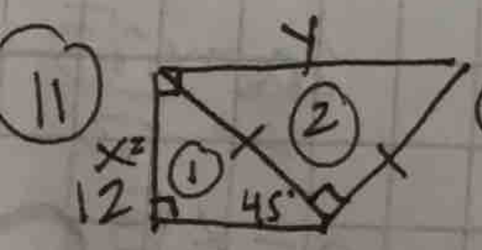


45	45	90
x	x	$x\sqrt{2}$
$8\sqrt{6}$	$8\sqrt{6}$	

$8\sqrt{6}\cdot\sqrt{2} =$
$8\sqrt{12}$
$4\ 3$
$16\sqrt{3}$

Perimeter: $8\sqrt{6} + 8\sqrt{6} + 16\sqrt{3}$

$\boxed{16\sqrt{6} + 16\sqrt{3}}$

⑪ 

①

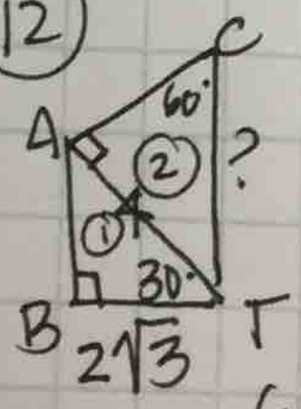
45	45	90
x	x	$x\sqrt{2}$
12		$12\sqrt{2}$

$12\sqrt{2}\cdot\sqrt{2}$

$\boxed{24}$

②

45	45	90
x	x	$x\sqrt{2}$
$12\sqrt{2}$		y

⑫ 

①

30	60	90
x	$x\sqrt{3}$	$2x$
$x = 2$	$2\sqrt{3}$	4

②

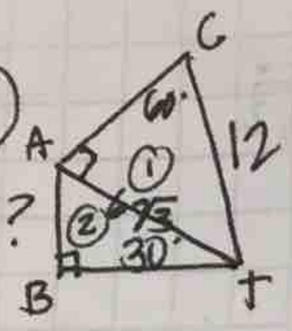
30	60	90
x	$x\sqrt{3}$	$2x$
	4	

$\frac{x\sqrt{3}}{\sqrt{3}} = \frac{4}{\sqrt{3}}$

$x = \frac{4}{\sqrt{3}}$

$2\left(\frac{4}{\sqrt{3}}\right) = \boxed{\frac{8}{\sqrt{3}}}$

(13)



① 30 | 60 | 90
x | $x\sqrt{3}$ | 2x
6 | $6\sqrt{3}$ | 12

$2x = 12$

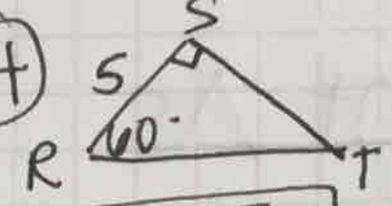
$x = 6$

② 30 | 60 | 90
x | $x\sqrt{3}$ | 2x
$6\sqrt{3}$

$\frac{2x}{2} = \frac{6\sqrt{3}}{2}$

$x = \boxed{3\sqrt{3}}$

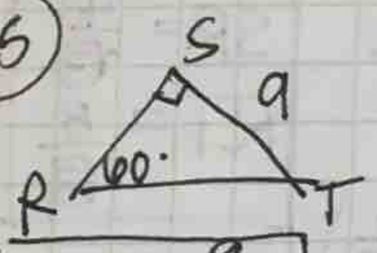
(14)



SR	ST	RT
30	60	90
x	$x\sqrt{3}$	2x
5		

$\boxed{ST = 5\sqrt{3} \quad RT = 10}$

(15)



RS	ST	RT
30	60	90
x	$x\sqrt{3}$	2x
	9	

$\frac{x\sqrt{3}}{\sqrt{3}} = \frac{9}{\sqrt{3}}$

$\boxed{RS = \frac{9}{\sqrt{3}} \quad RT = \frac{18}{\sqrt{3}}}$

(16)

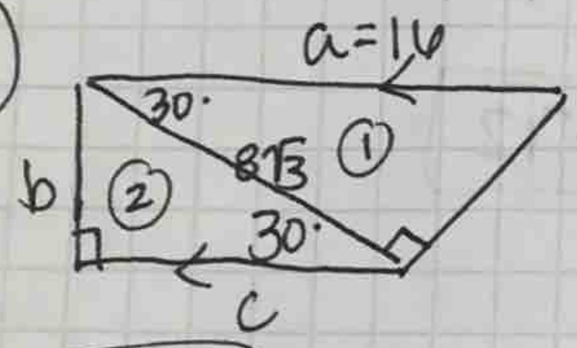
45	45	90
x	x	$x\sqrt{2}$
		$10\sqrt{3}$

$\frac{x\sqrt{2}}{\sqrt{2}} = \frac{10\sqrt{3}}{\sqrt{2}}$

Perimeter $= 4 \cdot \frac{10\sqrt{3}}{\sqrt{2}}$

$= \boxed{\frac{40\sqrt{3}}{\sqrt{2}}}$

(17)



① 30 | 60 | 90
x | $x\sqrt{3}$ | 2x
| | 16
$x = 8$

② b 30 | c 60 | 90
x | $x\sqrt{3}$ | 2x
| | $8\sqrt{3}$

$\frac{2x}{2} = \frac{8\sqrt{3}}{2}$

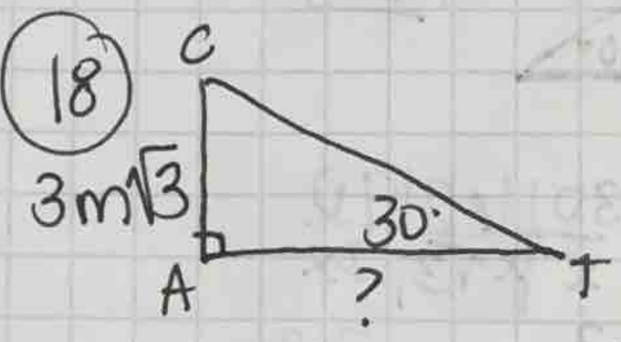
$x = 4\sqrt{3}$

$\boxed{b = 4\sqrt{3}}$

$c = 4\sqrt{3} \cdot \sqrt{3}$

$\boxed{c = 12}$

(18)

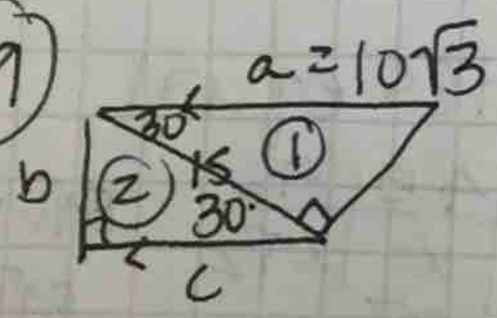


30	60	90
x	$x\sqrt{3}$	2x
$3m\sqrt{3}$		

$3m\sqrt{3} \cdot \sqrt{3}$

$3m \cdot 3 = \boxed{9m}$

(19)



① 30 | 60 | 90
x | $x\sqrt{3}$ | 2x
15 | $10\sqrt{3}$

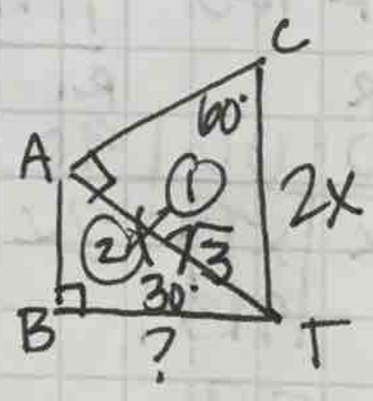
$x = 5\sqrt{3}$

② 30 | 60 | 90
x | $x\sqrt{3}$ | ~~2x~~
| | 15

$x = 7.5$

$\boxed{b = 7.5 \quad c = 7.5\sqrt{3}}$

(20)



① 30 | 60 | 90
x | $x\sqrt{3}$ | 2x
| | 2x

② 30 | 60 | 90
a | $a\sqrt{3}$ | 2a
| | $x\sqrt{3}$

$\frac{2a}{2} = \frac{x\sqrt{3}}{2}$

$a = \frac{x\sqrt{3}}{2}$

$BT = \frac{x\sqrt{3}}{2} \cdot \sqrt{3}$

$\frac{x \cdot 3}{2}$

$\boxed{\frac{3}{2}x}$