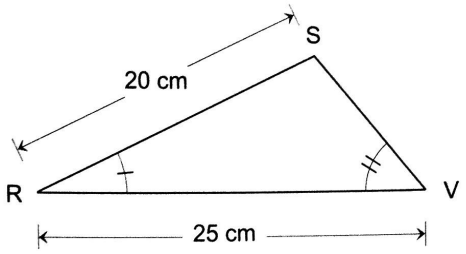
Name: _____
Date: _____

Final Exam Review – 20
Sample Final 02

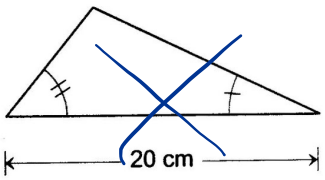
PART A

1. Consider triangle RSV shown at right.

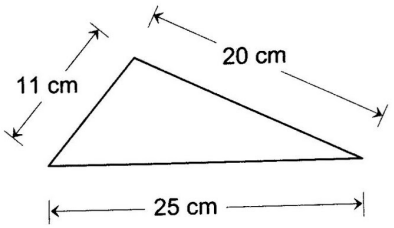


Which of the following triangles is necessarily congruent to triangle RSV?

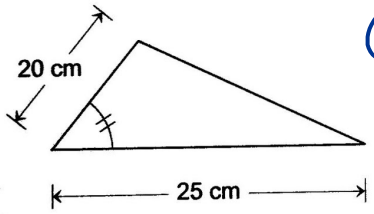
A)



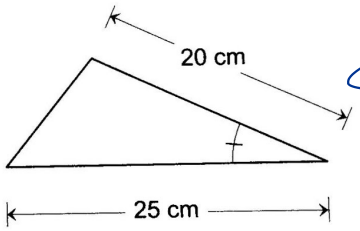
C)



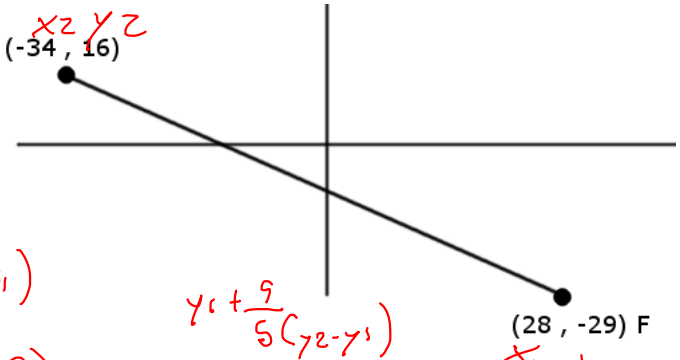
B)



D)



2. Point T **divides** line FW into a ratio of **2:3**, starting from point F.
What are the coordinates of point T?



A) **(–9.2 , –2)**

B) **(69.$\overline{3}$, –14)**

C) **(3.2 , –11)**

D) **(–13.$\overline{3}$, 1)**

3. Which of the following statements best describes the linear correlation between the x- and y-values represented in the contingency table below:

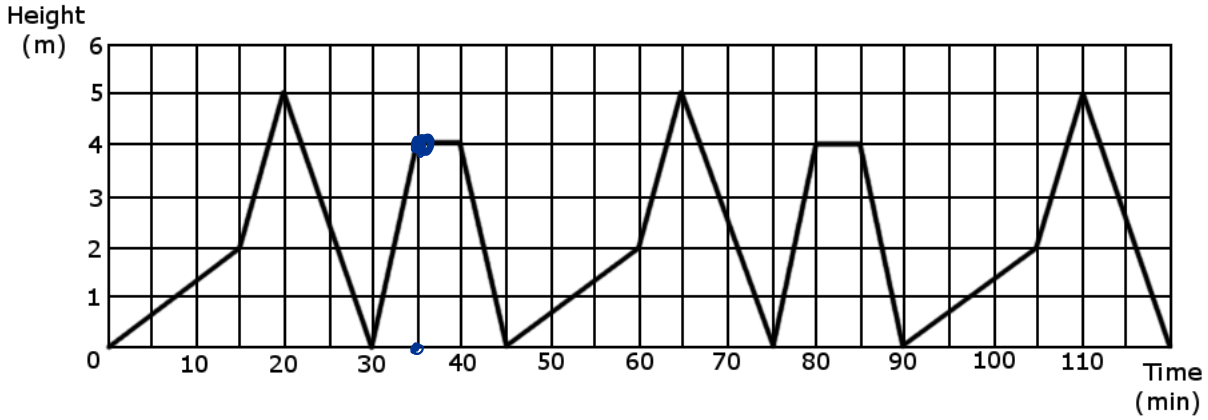
	Y-Values				
X-Values	[175 , 200 [	[200 , 225 [	[225 , 250 [	[250 , 275 [	[275 , 300 [
[120 , 170 [	2	3	2	0	0
[170 , 220 [	3	1	2	2	0
[220 , 270 [	2	3	3	3	1
[270 , 320 [	0	2	2	2	2
[320 , 370 [	0	0	1	2	2

A) Negative and Weak **C) Positive and Weak**

B) Negative and Strong **D) Positive and Strong**

4. Water shoots out of a fountain. The height of the jet of water varies regularly over time.

The function below shows the height of the water in relation to the time elapsed from the moment the fountain was turned on.



What will the height of the water fountain be after exactly 23 hours and 5 minutes?

period = 45 min

time = 23(60) = 1380 + 5 = 1385

full cycle = $\frac{1385}{45}$ = 30.77

time of full cycles = 30 × 45 = 1350

time left = 1385 − 1350 = 35

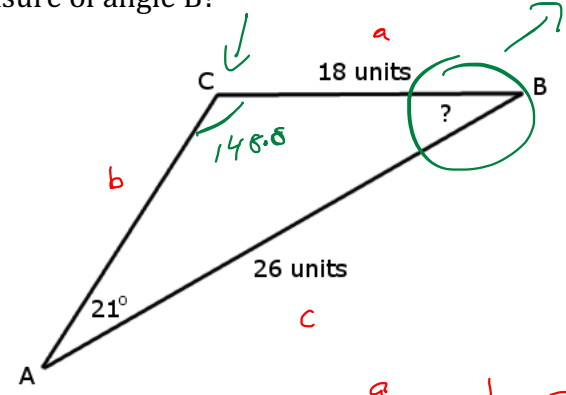
A) 2 m

B) 5 m

C) 4 m

D) 0 m

5. What is the measure of angle B?



dotcos

180 - 148.8 - 21 = 10.2

A) 31.2 °

B) 148.8

C) 10.2°

D) 52.2°

$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

$\frac{18}{\sin 21} = \frac{b}{\sin B} = \frac{26}{\sin C}$

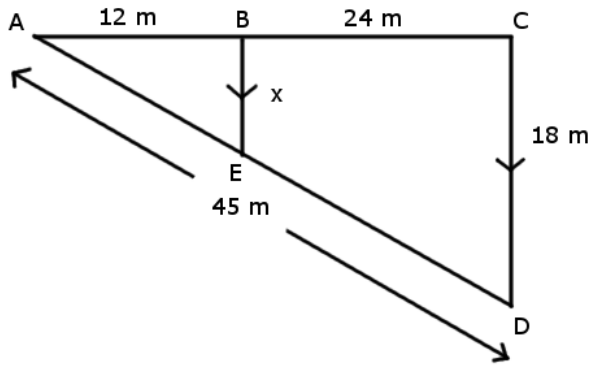
$\frac{\sin 21 (26)}{18} = \sin C$

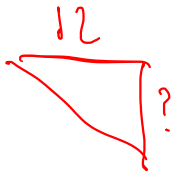
$0.517... = \sin C$

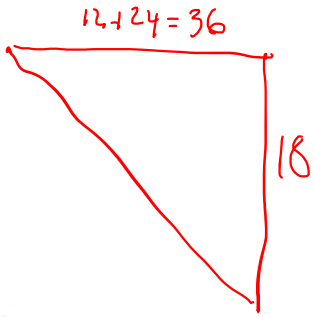
31.2

$180 - 31.2 = 148.8$

6. Solve for 'x'







$\frac{36}{12} = \frac{18}{?}$

$\frac{12(18)}{36} = ?$

6

A) 9 m

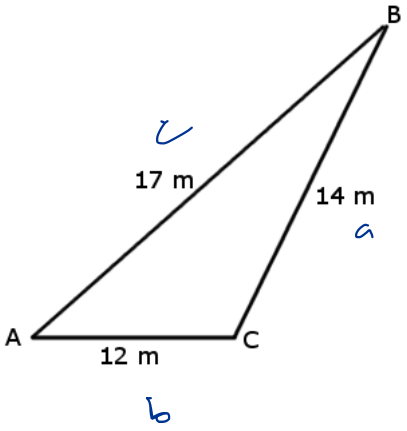
B) 6 m

C) 15 m

D) 22.5 m

PART B

7. What is the area of the triangle below
Round your answer to the nearest tenth of a unit.



$s = \frac{a+b+c}{2} = \frac{14+12+17}{2} = 21.5$

$\sqrt{s(s-a)(s-b)(s-c)}$

$\sqrt{21.5(21.5-14)(21.5-12)(21.5-17)}$

$\sqrt{21.5(7.5)(9.5)(4.5)}$

$\sqrt{6\,893.4375}$

82.02

Answer: 82 **m²**

8. The value of a video game depreciates 35% yearly.
In 5 years, the price of the video game will be $10.21.
What is the initial price of the video game?

$y = ac^x$

$10.21 = a(0.65)^5$

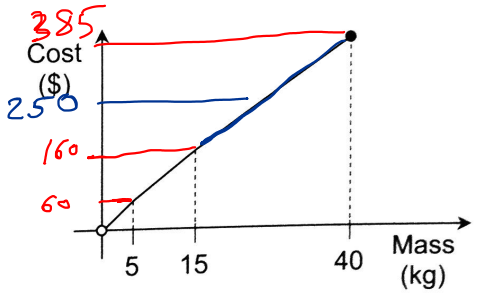
$\frac{10.21}{0.116...} = \frac{a(0.116...)}{0.116...}$

$88 = a$

x = years (5)
y = value (10.21)
a = ?
c = 1 35
100 − 35 = 65
$\frac{65}{100} = 0.65$

Answer = The initial price would be: $ 88

9. A hardware store sells screws in large quantities.
The cost of each purchase is determined by using the functions below.



$f(x)\{\quad 12x \quad , \quad if\ x \in]0,5] \quad 10x+10 \quad , \quad if\ x \in [5,15] \quad 9x+25 \quad , \quad if\ x \in [15,40]\ \}$

x = *mass of screws purchased, in kg*
f(x) = *cost of screw, in dollars*

A farmer bought screws for a total cost of $ 250. = y

What is the mass of screws bought by the farmer.

$y=12x \rightarrow y=12(5) \rightarrow y=60$

$y=10x+10 \quad y=10(15)+10=160$

$y=9x+25 \quad y=9(40)+25=385$

$y=9x+25$

$250=9x+25$
$-25 \quad -25$

$\frac{225}{9}=\frac{9x}{9}$

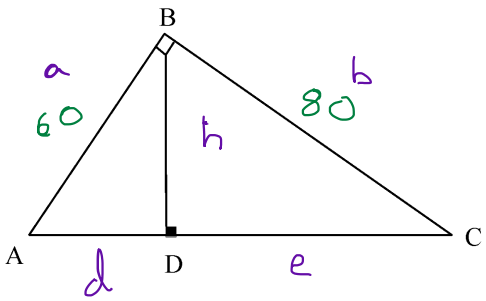
$25=x$

Answer: The mass of screws weighs 25 **kg**

10. The following information about triangle ABC below is known:

m $\overline{AB}$ = 60m
m $\overline{BC}$ = 80m

What is the measure of altitude BD ?



a = 60
b = 80
c = 100
d
e
h

$a^2+b^2=c^2$
$60^2+80^2=c^2$
$3600+6400=c^2$
$\sqrt{10000}=\sqrt{c^2}$
$100=c$

$a\cdot b=c\cdot h$
$60\cdot 80=100\cdot h$
$\frac{4800}{100}=\frac{100\cdot h}{100}$
$48=h$

$a^2=c\cdot d$
$b^2=c\cdot e$
$h^2=d\cdot e$
$a\cdot b=c\cdot h$
$c=d+e$
$a^2+b^2=c^2$
$a^2=h^2+d^2$
$b^2=h^2+e^2$

Answer: Altitude BD measures 48 m

11. The 455 data values in a statistical distribution are given in increasing order.

200 , 251 , … , 291 , 295 , 295 , 299 , … , 700

400 data values | 53 data values

What is the percentile rank associated with a data value of 295?

$\text{percent} = \frac{\text{lower} + \frac{\text{equal}}{2}}{\text{total}} \times 100$

$\frac{400+\frac{2}{2}}{455}\times 100$

$\frac{401}{455}\times 100$

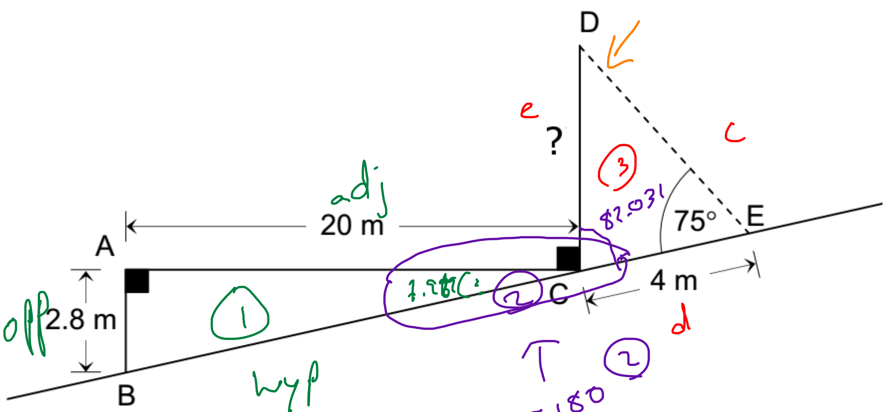
88.1789

Answer: The percentile rank is 89.

PART C

12. What is the length of line segment CD?

180 - 75 - 82.031 = 22.969



180 - 90 - 7.969 = 82.031

① S O/H C A/H T O/A

tan x / 1 = 2.8 / 20

1(2.8) / 20 = tan x

0.14 = tan x

7.969 = x

c / sin C = d / sin D = e / sin E

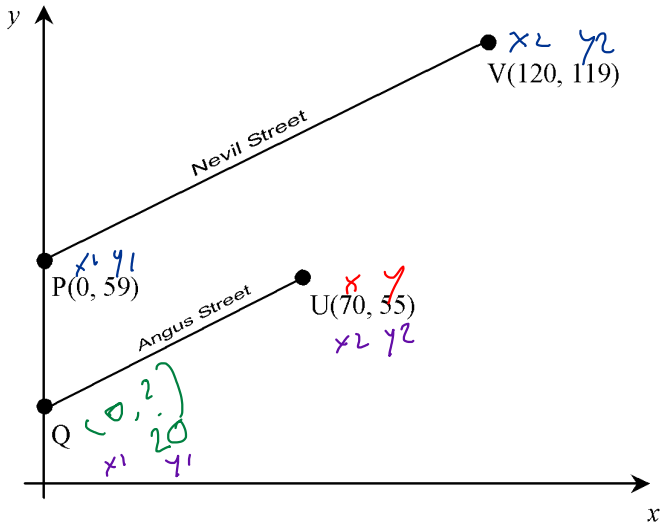
c / sin 82.031 = 4 / sin 22.969 = ? / sin 75

4(sin 75) / sin 22.969 = ?

9.9 = ?

Answer: The distance from C to D is 9.9

13. Nevil Street is parallel to Angus Street.
The scale of this graph is in **metres**.



What is the length of Angus Street to the nearest tenth of a metre?

slope PV

$a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{119 - 59}{120 - 0} = \frac{60}{120} = 0.5$

Angus
Find b
$y = ax + b$
$55 = 0.5(70) + b$
$55 = 35 + b$
$-35 \quad -35$
$20 = b$

$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
$\sqrt{(70 - 0)^2 + (55 - 20)^2}$
$\sqrt{(70)^2 + (35)^2}$
$\sqrt{4900 + 1225}$
$\sqrt{6125}$

78.262

78.3

Answer: To the nearest tenth of a meter, the length of Angus street is 78.3 m