3. Determine the measure of θ to the nearest degree.

$$SSS = \text{cosine law}$$

102.0 cm   91.8 cm

100.2 cm

a.   60°
b.   59°
c.   61°
d.   62°
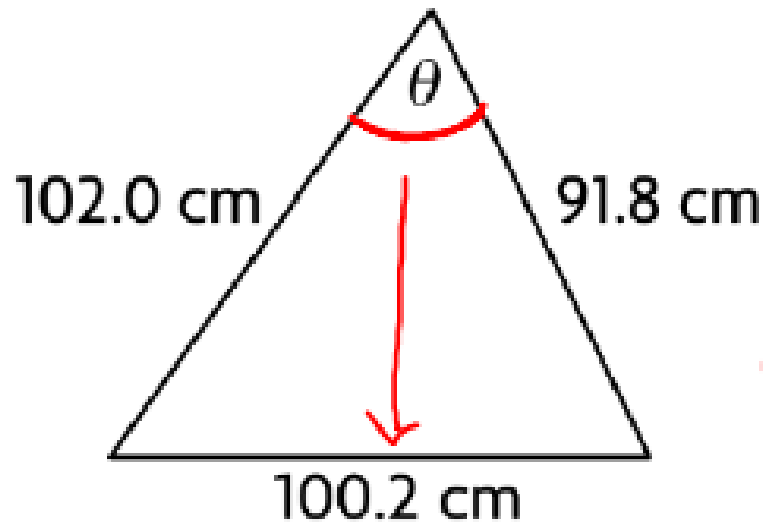
$$\cos\theta = \frac{102^2 + 91.8^2 - 100.2^2}{2(102)(91.8)}$$

$$\cos^{-1}$$

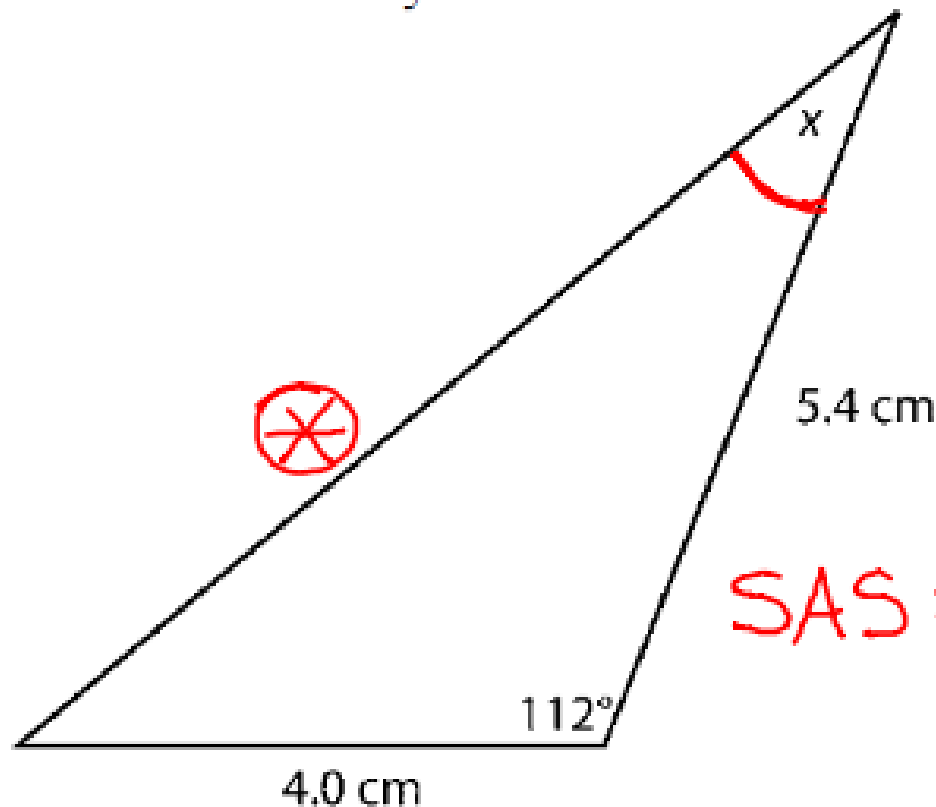$$\cos\theta = \frac{8791.2}{18727.2} \overset{\cos^{-1}}{=} 0.469\ldots$$

$$\theta = 62°$$

5. How you would determine the indicated angle measure, if it is possible?
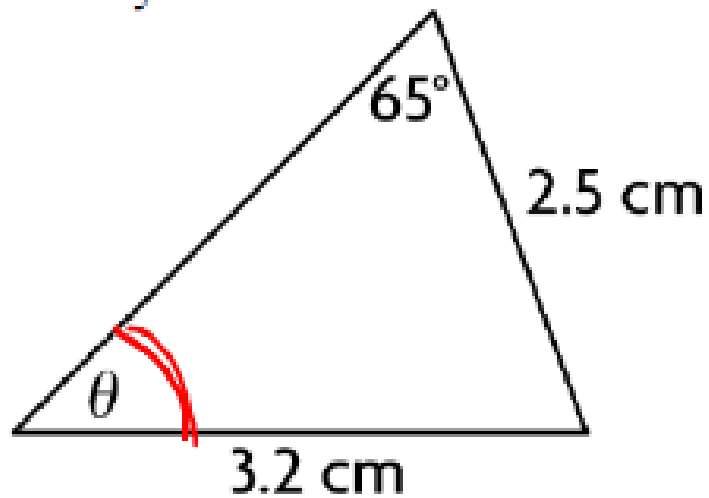
SSA

a. not possible
b. primary trigonometric ratios
c. the cosine law
d. the sine law

6. Which law could you use to determine the unknown angle in this triangle?

5.4 cm

SAS = cosine law

112°

4.0 cm

a. neither the sine law nor the cosine law
b. the cosine law only
c. the sine law and the cosine law
d. the sine law only

adj opp

8. In $\triangle XYZ$, $\angle Y = 29°$, $x = 15.4$ m, and $y = 12.0$ m.
   Which statement is true for this set of measurements?

   a. ~~This is not a SSA situation.~~
   b. This is a SSA situation; no triangle is possible.
   c. This is a SSA situation; only one triangle is possible.
   d. This is a SSA situation; two triangles are possible.

opp $\leq$ adj

12 15.4

opp $\geq$ h

12 7.466

$h = adj \sin Y$

$h = 15.4 \sin 29°$

$h = 7.466\ldots$

11. Determine the length of d to the nearest tenth of a centimetre.

AAS

D

8.2 cm

58°   75°

E d F
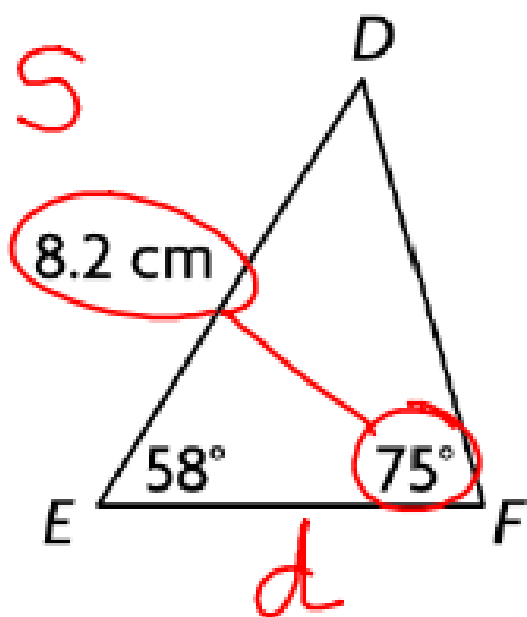
$$\frac{d}{\sin D} = \frac{f}{\sin F}$$

$$\frac{d}{\sin 47°} = \frac{8.2}{\sin 75°}$$

$$D = 180° - 58° - 75°$$
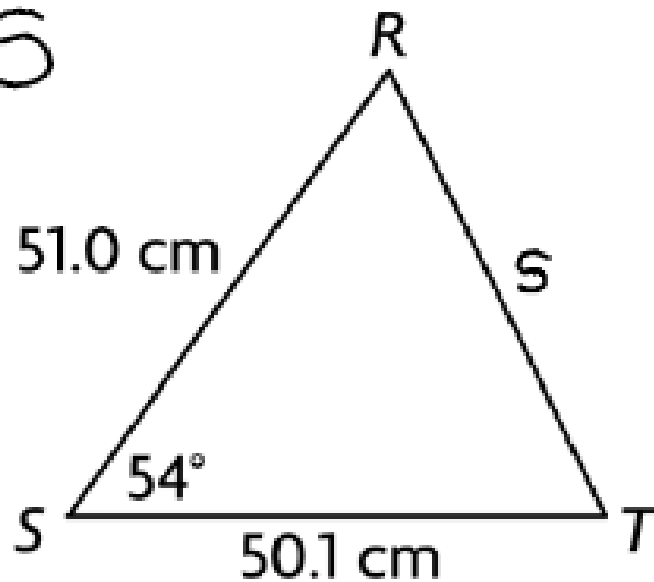$$D = 47°$$

$$d = \frac{8.2 \sin 47°}{\sin 75°}$$

$$d = 6.2086\ldots$$

13. Determine the length of s to the nearest tenth of a centimetre.

SAS

51.0 cm

54°

50.1 cm

$$s^2 = r^2 + t^2 - 2rt\cos S$$
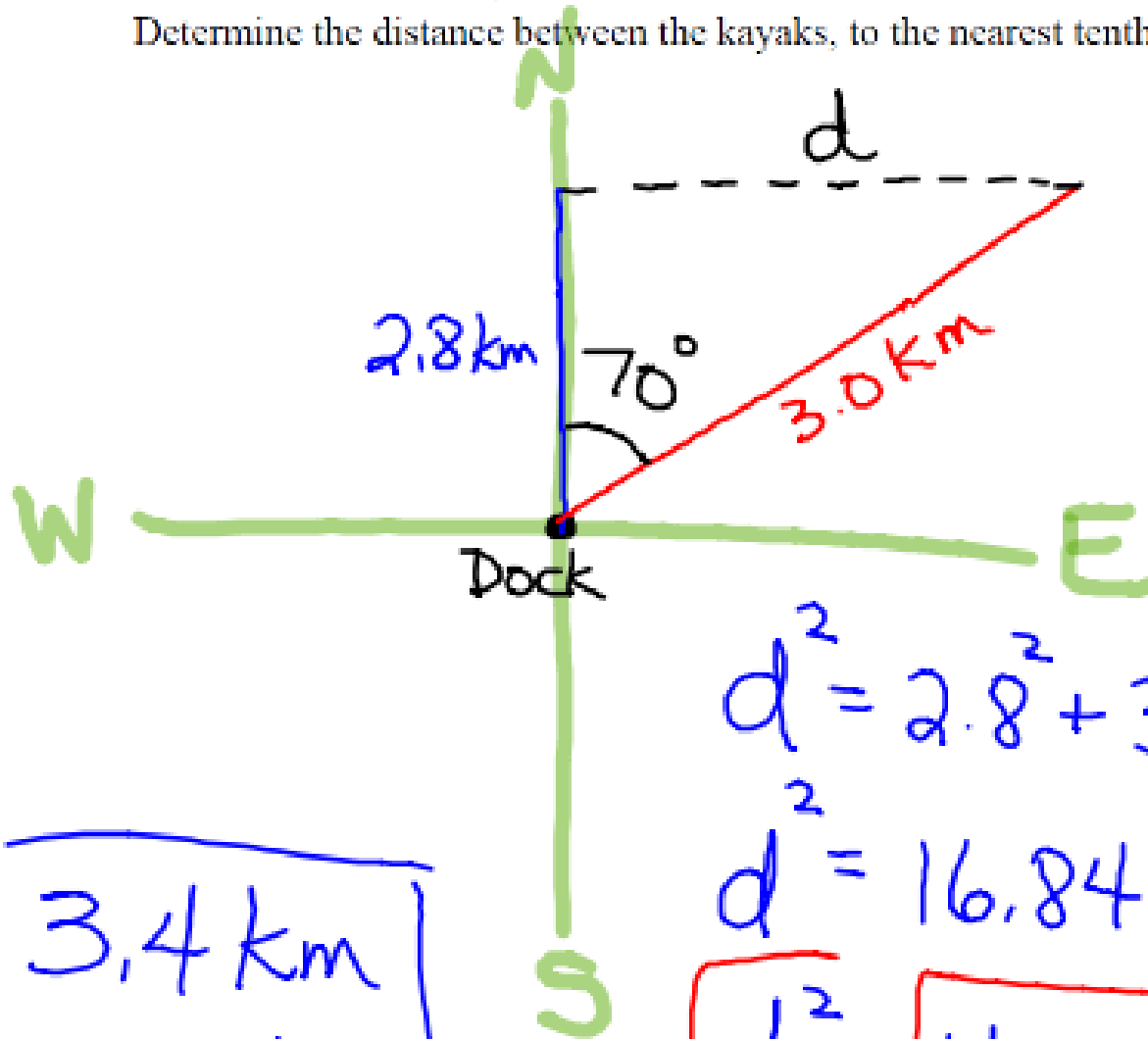
$$s^2 = 50.1^2 + 51^2 - 2(50.1)(51)\cos 54°$$

$$s^2 = 5111.01 - 3003.7001\dots$$

$$\sqrt{s^2} = \sqrt{2107.309\dots}$$

$$s = 45.905\dots \text{ cm}$$

45.9 cm

15. A kayak leaves a dock on Lake Athabasca, and heads due north for 2.8 km. At the same time, a second kayak travels in a direction N70°E from the dock for 3.0 km.
Determine the distance between the kayaks, to the nearest tenth of a kilometre.

$$d^2 = 2.8^2 + 3^2 - 2(2.8)(3)\cos 70°$$

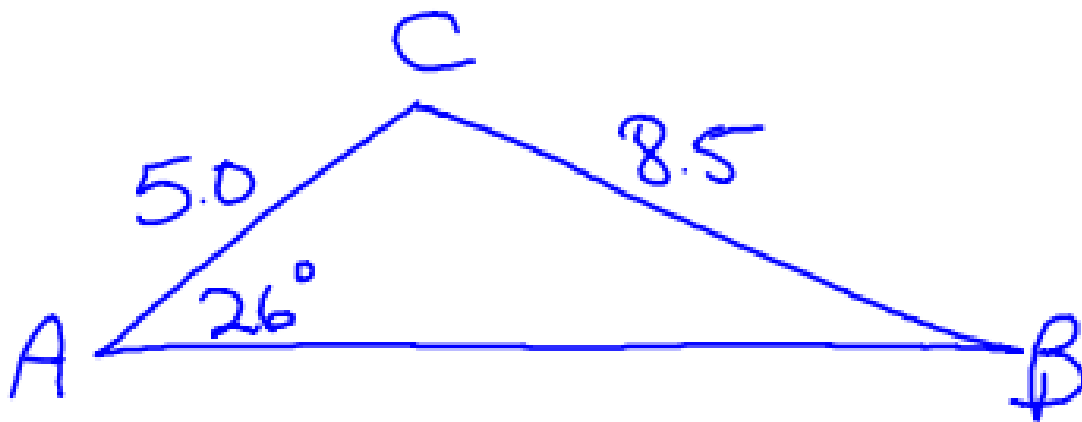$$d^2 = 16.84 - 5.7459\ldots$$

$$\sqrt{d^2} = \sqrt{11.09\ldots}$$

$$d = 3.459\ldots$$

3,4 km apart

opp > adj

20. In $\triangle ABC$, $\angle A = 26°$, $a = 8.5$ cm, and $b = 5.0$ cm. Determine the number of triangles (zero, one, or two) that are possible for these measurements. Draw the triangle(s) to support your answer.

opp > adj ⇒ 1 △

The results for a timed competition are normally distributed with a mean (μ) of 15 minutes and a standard deviation (σ) of 2.5 minutes.

a) Draw a normal curve using the above information. Label completely.
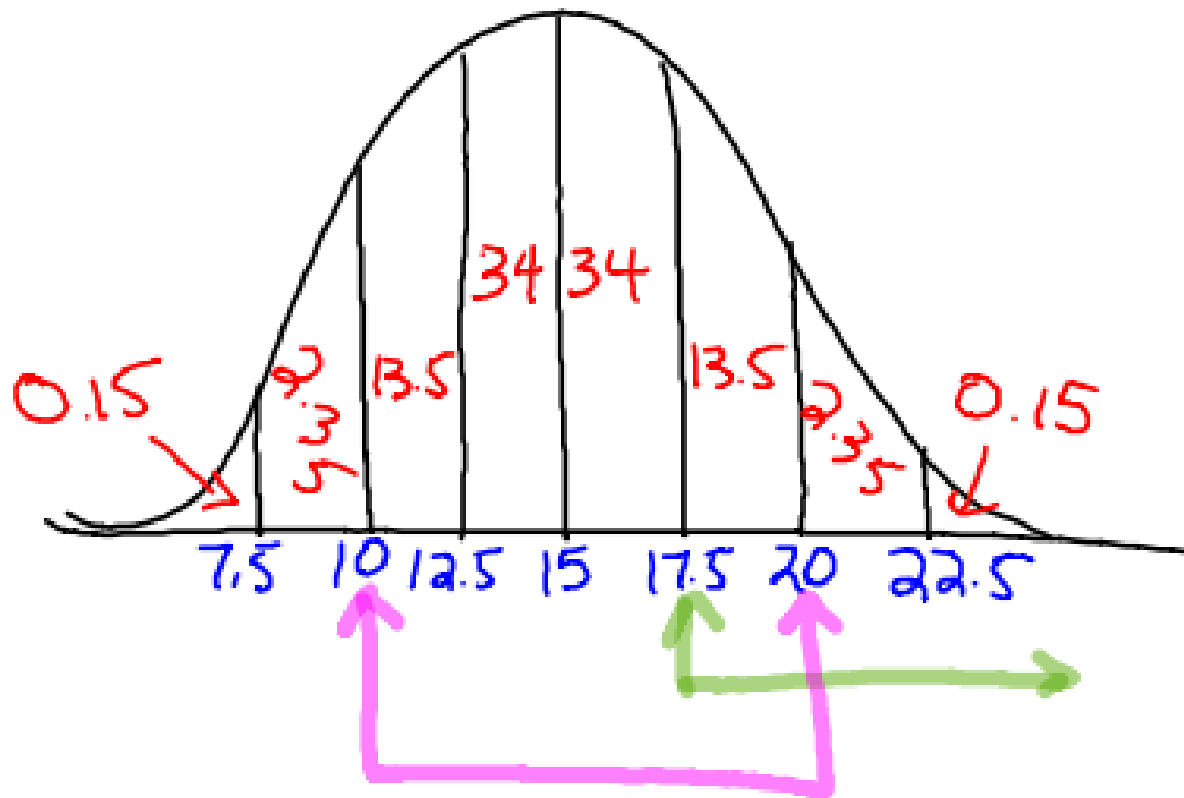
b) What percentage of the ~~class scored above 85% on the test?~~ is above 17.5 min?

16%

c) What percentage ~~of the class scored~~ is between ~~65 and 75%?~~ 10 ÷ 20 mm?

95%

1. What z-score corresponds to having 67.35% of the data to the right?

a. z = 0.45
b. z = 0.445
c. z = -0.45
d. z = -0.44

$$100 - 67.35$$

$$= 32.65\% \text{ to the left}$$

$$0.3265$$

$$Z = --0.45$$

10. Determine the z-score for the given values.
   $\mu = 360$, $\sigma = 20$, $x = 315$

$$Z = \frac{x - \mu}{\sigma}$$

$$Z = \frac{315 - 360}{20}$$

$$Z = -\frac{45}{20} = -2.25$$

11. Calculate the raw score for the given values.
$\mu = 86$, $\sigma = 13.5$, $z = -0.27$

$$X = \mu + z\sigma$$

$$X = 86 + (-0.27)(13.5)$$

$$X = 86 - 3.645$$

$$X = 82.355$$

12. Determine the percent of data:
   a) to the right of the z-score: $z = -0.19$. $1 - 0.4247 = 0.5753$

   b) to the left of the z-score: $z = 1.13$ 0.8708

   c) between the z-scores of $z = -0.34$ and $z = 0.81$

$$0.7910$$
$$- \ 0.3669$$
$$\overline{0.4241}$$

13. The results of a survey have a confidence interval of 29% to 37%, 9 times out of 10. Determine the margin of error.

± 4

$37 - 29 = 8 \div 2 = 4$

14. A survey regarding people's perceptions of car manufacturers' reliability found that 66% plus or minus 5% of respondents believe that Japanese cars are the most reliable, 95 times out of 100. In a population of 250,000, how many people would say they believe Japanese cars are the most reliable?

$$66\% \pm 5\%$$

$$66 - 5 = 61\% = 0.61 \times 250000 = 152{,}500$$
$$\text{to}$$
$$\text{to}$$
$$66 + 5 = 71\% = 0.71 \times 250000 = 177{,}500$$

26. A hardware manufacturer produces bolts that has an average length of 1.22 in., with a standard deviation of 0.02 in. To be sold, all bolts must have a length between 1.20 in. and 1.25 in. What percent, to the nearest whole number, of the total production can be sold?
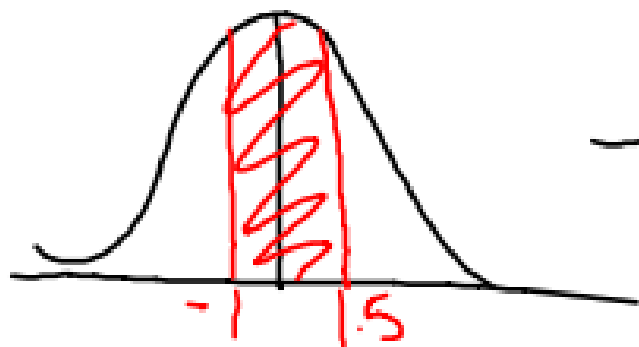
$\mu = 1.22$

$\sigma = 0.02$

$X_1 = 1.20$

$X_2 = 1.25$

$Z_1 = \dfrac{1.2 - 1.22}{0.02} = -1$

$Z_2 = \dfrac{1.25 - 1.22}{0.02} = 1.5$

$$\begin{array}{r} 0.9332 \\ -\ 0.1587 \\ \hline 0.7745 \end{array}$$