1. (T3.5, $\mathbf{E}, \mathbf{C I})$ Solve the following equations on the interval $-360^{\circ} \leq x \leq 360^{\circ}$
(Cirrito, 10.1, p.315)

| a. $\quad \sin (x)=\frac{\sqrt{3}}{2}$ | b. $\quad \cos (x)=-\frac{1}{2}$ | c. | $\sin (x)=0$ |
| :---: | :---: | :---: | :--- | :--- |
| d. $\quad \tan (x)-1=0$ | e. $\quad 2 \cos (x)-1=0$ | f. | $\sqrt{3} \tan (x)+1=0$ |

2. ( $\mathbf{T} 3.6, \mathrm{E}, \mathrm{Cl}$ ) Given the special right triangle shown below.
(Cirrito, 10.2, p.327)
a. Determine $\sin (x)$ and $\cos (x)$.
b. Hence determine the value of $\sin ^{2}(x)+\cos ^{2}(x)$.
c. Sketch a right triangle with sides of length 3,4 , and 5 . Pick an angle of that triangle and determine $\sin (x)$ and $\cos (x)$. Then find the value of $\sin ^{2}(x)+\cos ^{2}(x)$.
d. What do you notice?

3. (T4.4, R, CA) Eight students took two mathematics exams. We want to know if the score on Exam 1 is predictive of the score on Exam 2. The scores are given below:
(Oxford, 10.1, p.332)

| Exam 1 | 54 | 72 | 32 | 68 | 55 | 80 | 45 | 77 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Exam 2 | 31 | 38 | 16 | 34 | 27 | 41 | 22 | 37 |

a. In your notes sketch the results on a scatter diagram.
b. Describe the correlation (from your diagram).
c. Complete the sentence: "Students with a high score on Exam 1 tend to have a ...score on Exam 2."
d. Find the equation of the line-of-best-fit.
e. A student achieved a score of 40 on Exam 1. Predict their score on Exam 2.
f. Another student scored 95 on Exam 1, how confident are you in predicting what that student will score on Exam 2?
4. (T1.9, R, CA) . Determine the coefficient of the $x^{3}$ term in the binomial expansion of $(2 x-3)^{7}$.
(Cirrito, 4.1, p.95)
5. (T1.4, R, CA) Mohria invests $\$ 3000$ in an account which pays $3 \%$ annual interest, compounded yearly. Ryan invests $\$ 3000$ in an account which also pays $3 \%$ annual interest, but is compounded monthly. Assuming neither person withdraws any money, how much more money does Ryan have after 10 years?
(Oxford, 4.8, p.131)
6. (T4.2, E, CI) The following graph shows the time that students listen to music during school.
(Oxford, 8.5, p.271)

a. Using the graph, estimate:
i. The median time that students listen to music
ii. The interquartile range (IQR)
iii. The minimum time a student must listen to music to be in the top $10 \%$
b. The minimum listening time is zero, and the maximum listening time is 45 minutes. Draw a box and whisker plot to represent this information.
7. ( $\mathbf{T} 2.11, \mathbf{R}, \mathbf{C I})$ Given the function $f(x)=-2 e^{x-3}+1$,
(Cirrito, Chpt 6, p.167)
a. Sketch the function $g(x)=e^{x}$ in your notes, then using your knowledge of transformations, sketch the equation of $f(x)$ as well.
b. The point $A\left(2, e^{2}\right)$ is on the graph of $g(x)$. P is the corresponding point on $f(x)$. Write down the coordinates of P , in terms of $e$.
8. (T3.2, R, CA) Yasmine wakes up and decides to take a walk. She leaves her house and walks 2 kn due north. Then she turns and walks another 3 km in the direction $N 35^{\circ} \mathrm{W}$ (this is a bearing of $325^{\circ}$ ). Then she decides to walk directly back home. At what bearing must she walk and for what distance?
(Oxford, 11.5, p. 386

